IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

KONINKLIJKE PHILIPS N.V., Plaintiff v. THALES DIS AIS USA LLC (F/K/A GEMALTO IOT LLC F/K/A CINTERION WIRELESS MODULES NAFTA LLC), THALES DIS AIS DEUTSCHLAND GMBH (F/K/A GEMALTO M2M GMBH), THALES USA, INC., THALES S.A., CALAMP CORP., XIRGO TECHNOLOGIES, LLC, LAIRD CONNECTIVITY, INC. Defendants.	Civil Action No.: JURY TRIAL DEMANDED

COMPLAINT AND JURY DEMAND

1. Plaintiff Koninklijke Philips N.V. ("Philips") is a public limited company established under the laws of The Netherlands, having its registered office at High Tech Campus 52, 5656 AG Eindhoven, The Netherlands.[1]

2. Defendant Thales DIS AIS USA LLC is an entity of the State of Delaware, organized under the laws of the State of Delaware and having a regular and established place of business at 310 120th Avenue NE, Unit A/100, Bellevue, Washington, 98005.

3. Defendant Thales DIS AIS Deutschland GmbH is a German entity headquartered at Werinherstraße. 81, München, Bayern, 81541, Germany.

[1] Allegations herein are with knowledge with respect to Philips' own acts and on information and belief as to other matters.

4. Defendant Thales S.A. is a French entity headquartered at Tour Carpe Diem Esplanade Nord, 31 Place des Corolles - CS 20001, Courbevoie, 92098 Paris La Defense Cedex, Paris, France.

5. Defendant Thales USA, Inc. is an entity of the State of Delaware, organized under the laws of the State of Delaware and having a regular and established place of business at 2733 Crystal Drive Suite 120, Arlington, Virginia, 22202.

6. Defendants Thales DIS AIS USA LLC, Thales DIS AIS Deutschland GmbH, Thales S.A, and Thales USA, Inc. are referred to collectively herein as "Thales".

7. Defendant CalAmp Corp. ("CalAmp") is an entity of the State of Delaware, organized under the laws of Delaware and having a principal place of business at 15635 Alton Parkway, Suite 250, Irvine, California 92618.

8. Defendant Xirgo Technologies, LLC ("Xirgo") is an entity of the State of Delaware, organized under the laws of Delaware and having a principal place of business at 188 Camino Ruiz, 2nd Floor, Camarillo, California 93012.

9. Defendant Laird Connectivity, Inc. ("Laird") is an entity of the State of Delaware, organized under the laws of Delaware and having a principal place of business at 50 South Main Street, Akron, Ohio 44308.

10. Thales– individually and/or jointly with others – has infringed (literally and/or by equivalents), and continues to infringe, Philips' patent rights by making, using, importing, selling, and/or offering to sell products and methods covered by one or more patent claims within the United States, and/or by contributing to or inducing such infringement.

11. Thales induces its subsidiaries, affiliates, retail partners, and direct and indirect customers into making, using, selling, offering for sale, and/or importing throughout the United

States, including within this District, products and methods accused of infringement. Thales provides a distribution channel of infringing products within this Judicial District and the U.S. nationally.

12. CalAmp – individually and/or jointly with others – has infringed (literally and/or by equivalents), and continues to infringe, Philips' patent rights by making, using, importing, selling, and/or offering to sell products and methods covered by one or more patent claims within the United States, and/or by contributing to or inducing such infringement.

13. CalAmp induces its subsidiaries, affiliates, retail partners, and direct and indirect customers into making, using, selling, offering for sale, and/or importing throughout the United States, including within this District, products and methods accused of infringement. CalAmp provides a distribution channel of infringing products within this Judicial District and the U.S. nationally.

14. Xirgo – individually and/or jointly with others – has infringed (literally and/or by equivalents), and continues to infringe, Philips' patent rights by making, using, importing, selling, and/or offering to sell products and methods covered by one or more patent claims within the United States, and/or by contributing to or inducing such infringement.

15. Xirgo induces its subsidiaries, affiliates, retail partners, and direct and indirect customers into making, using, selling, offering for sale, and/or importing throughout the United States, including within this District, products and methods accused of infringement. Xirgo provides a distribution channel of infringing products within this Judicial District and the U.S. nationally.

16. Laird – individually and/or jointly with others – has infringed (literally and/or by equivalents), and continues to infringe, Philips' patent rights by making, using, importing, selling,

and/or offering to sell products and methods covered by one or more patent claims within the United States, and/or by contributing to or inducing such infringement.

17. Laird induces its subsidiaries, affiliates, retail partners, and direct and indirect customers into making, using, selling, offering for sale, and/or importing throughout the United States, including within this District, products and methods accused of infringement. Laird provides a distribution channel of infringing products within this Judicial District and the U.S. nationally.

RELATED LITIGATION

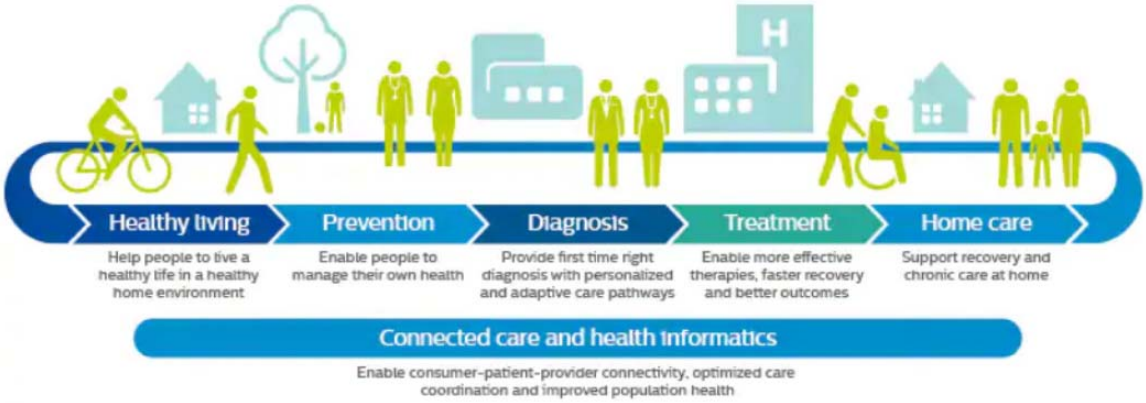
18. Contemporaneously with the filing of this Complaint, Philips has filed a complaint with the International Trade Commission ("ITC") captioned *Certain UMTS and LTE Cellular Communication Modules and Products Containing the Same*, 337-TA-xxxx (USITC).

19. The ITC complaint names three respondent groups: the Thales (Gemalto/Cinterion) Respondent Group, the Telit Respondent Group, and the Quectel Respondent Group. The defendants in this lawsuit are the same as respondents in the Thales (Gemalto/Cinterion) Respondent Group, namely Thales, CalAmp, Xirgo, and Laird. The same patents asserted in this case are asserted in the ITC investigation.

20. Section 1659 of Title 28 (Judiciary and Judicial Procedure) provides that within 30 days "at the request of a party to the civil action that is also a respondent in the proceeding before the Commission, the district court shall stay, until the determination of the Commission becomes final, proceedings in the civil action with respect to any claim that involves the same issues involved in the proceeding before the Commission."

INTRODUCTION

21. Since its founding in 1891, Philips has dedicated significant resources to research and development for the advancement of technology used around the world through its business units including those described below. Philips strives to make the world healthier and more sustainable through innovation with the goal of improving the lives of billions of people. Philips approaches healthcare as a continuum where its technologies can be applied across activities of healthy living, prevention, diagnosis, treatment and home care as depicted in this graphic:



22. Connected health technologies developed by Philips are employed across the health continuum. With uses inside and outside hospitals, Philips has developed technologies that empower consumers to better manage their health by improving access to and analysis of personal health information obtained in various manners.

23. Philips researches and develops health monitoring technology, develops and sells products that allow individuals to monitor and improve their health, and transfers or licenses its technologies and/or the patents that protect its technologies to customers who use the technologies in their products. As a result of these efforts, Philips has become a world leader in health monitoring technology and innovation and a major contributor to the United States economy and jobs.

24. Philips is also a world-recognized innovator of digital cellular communication technology facilitating the interconnection of devices through communication networks and with the internet or world-wide web. Philips is a founding member of the European Telecommunications Standards Institute ("ETSI") and participates in the 3rd Generation Partnership Project ("3GPP"). ETSI, 3GPP and member Philips have been instrumental to bringing efficient and functional cellular data communications to people across the world increasing the standard of living for millions of people.

25. Philips has engaged in research and development in the mobile communications area since the 1980s, including work on 3G cellular communications and Universal Mobile Telecommunications Service ("UMTS") starting in the 1990s and work on 4G cellular communications and Long-Term Evolution ("LTE") starting in the 2000s. Philips has been actively involved in research throughout the development of UMTS and also during the core development phase of LTE, including from the initial phase, going through finalizing the first release of LTE, and then continuing for further years of additional work. Philips has also actively engaged in the standardization process, with representatives of Philips attending standardization meetings and making technical contributions to the development of the world-wide standards.

26. Philips also manufactured 2G (Global System for Mobile ("GSM")) phones, particularly in the early 2000s, in addition to its mobile communications research, and also had a significant portfolio of patents related to GSM. While Philips stopped manufacturing mobile telecommunications by around 2006, Philips continued with mobile communications research, including research related to UMTS and LTE, through around mid-2010.

27. Philips shares its innovation with others through, for example, its pioneering role in offering access to its technology through licensing. In this way, Philips has been able to share its

innovations with many other companies. Philips' patent portfolio currently includes more than 60,000 patents. In 2019, for example, Philips filed for over 1,000 new patents, with a focus on health technology services and solutions.

28. In accordance with ETSI licensing practices, Philips has proceeded in good faith to offer its world-wide cellular communications portfolio for licensing including to Thales, as explained herein. Revenue received from the licensing of Philips' innovations through such global licenses is used to fund further research within Philips, including in the healthcare field.

29. Occasionally, companies like Thales, CalAmp, Xirgo and Laird will not accept Philips' offers to license its technology, putting Philips in the difficult position of enforcing its patents on a patent by patent basis in each country around the world. For instance, Thales has leveraged the enormous expense of such litigation to hold-out on and refuse to accept the world-wide license offered by Philips. As the Supreme Court of the United Kingdom recently observed in relation to ETSI technology, "implementers who were infringing the patents would have an incentive to continue infringing until, patent by patent, and country by country, they were compelled to pay royalties." *See Unwired Planet Int'l Ltd v. Conversant Wireless Licensing SARL*, [2020] UKSC 37 at ¶167 (Aug. 26, 2020). Some companies like Thales may even maintain a fund to pay damages in the event that they are ever required to pay royalties by a court such as this one (the United States District Court for the District of Delaware), either directly or through indemnification of their customers. Thales and the other defendants have no intention of ever agreeing to the world-wide license that Philips offers for its global portfolio consistent with ETSI practices.

30. The devices claimed in the Asserted Patents have proved to be of great importance to the field of digital cellular communications including 3G UMTS and/or 4G LTE

cellular standards established by ETSI and 3GPP. These patents, and others, are fundamental technology to the manufacture and sale of cellular communication modules and related internet of things ("IoT") devices.

JURISDICTION AND VENUE

31. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§1331 and 1338(a).

32. This Court has both general and specific personal jurisdiction over defendants Thales DIS USA and Thales USA. Both defendants are incorporated in and entities of the State of Delaware. Both defendants have purposefully availed themselves of the privilege of conducting business activities and have conducted and done business in the State of Delaware. Both defendants have availed themselves of the rights and benefits of Delaware law and have engaged in systematic and continuous contact with the State of Delaware including with respect to the development, manufacture, marketing, sale, and use of one or more Accused Products. Both defendants also derive substantial revenue from sales of the infringing products and services in the State of Delaware, and each has availed itself of the privilege of doing business with Delaware. Each defendant is doing business and has committed acts of infringement in this Judicial District.

33. This Court further has personal jurisdiction over defendants Thales DIS AIS Deutschland and Thales S.A. at least pursuant to 10 Del. C. § 3104 and Fed. R. Civ. P. 4(k)(2). Each defendant places infringing products into the stream of commerce knowing they will be sold and used in the State of Delaware and elsewhere in the United States, and each defendant economically benefits from the retail sale of infringing products in the State of Delaware. Each defendant, alone or through other subsidiaries as agents, makes the Accused Products and supplies

and/or makes available the Accused Products to companies that further market and sell the Accused Products. Together, the division of labor between making, manufacturing, marketing and sales amongst these defendants and their distributors amounts to an organized association, establishing a distribution channel for the Accused Products in the United States.
Each defendant knows or can reasonably foresee that a termination point of the distribution channel targeted to the United States includes this Judicial District.

34. This Court has both general and specific personal jurisdiction over CalAmp. CalAmp is incorporated in Delaware. Furthermore, CalAmp has purposefully availed itself of the privilege of conducting business activities and has conducted and done business in the State of Delaware. CalAmp has availed itself of the rights and benefits of Delaware law and has engaged in systematic and continuous contact with the State of Delaware including with respect to the development, manufacture, marketing, sale, and use of one or more Accused Products. CalAmp also derives substantial revenue from sales of the infringing products and services in the State of Delaware, and it has availed itself of the privilege of doing business with Delaware. CalAmp is doing business and has committed acts of infringement in this Judicial District.

35. This Court has both general and specific personal jurisdiction over Xirgo. Xirgo is incorporated in Delaware. Furthermore, Xirgo has purposefully availed itself of the privilege of conducting business activities and has conducted and done business in the State of Delaware. Xirgo has availed itself of the rights and benefits of Delaware law and has engaged in systematic and continuous contact with the State of Delaware including with respect to the development, manufacture, marketing, sale, and use of one or more Accused Products. Xirgo also derives substantial revenue from sales of the infringing products and services in the State of Delaware, and

it has availed itself of the privilege of doing business with Delaware. Xirgo is doing business and has committed acts of infringement in this Judicial District.

36. This Court has both general and specific personal jurisdiction over Laird. Laird is incorporated in Delaware. Furthermore, Laird has purposefully availed itself of the privilege of conducting business activities and has conducted and done business in the State of Delaware. Laird has availed itself of the rights and benefits of Delaware law and has engaged in systematic and continuous contact with the State of Delaware including with respect to the development, manufacture, marketing, sale, and use of one or more Accused Products. Laird also derives substantial revenue from sales of the infringing products and services in the State of Delaware, and it has availed itself of the privilege of doing business with Delaware. Laird is doing business and has committed acts of infringement in this Judicial District.

37. For defendants Thales DIS USA, LLC and Thales USA, Inc., venue is proper under 28 U.S.C. §§ 1391(b), 1391(c), and 1400(b) because each defendant resides in this Judicial District. Each defendant also has substantial additional activities in this Judicial District as alleged herein. Each defendant has also engaged and continues to engage in infringing acts in this Judicial District such as alleged herein

38. For Thales DIS AIS Deutschland and Thales S.A., venue is proper under 28 U.S.C. §§ 1391(c)(3), and 1400(b) because each defendant is a foreign corporation. As noted above, Thales has committed and continues to commit acts of infringement under Fed. R. Civ. P. 4(k)(2) and within this Judicial District giving rise to this action.

39. For CalAmp, venue is proper under 28 U.S.C. §§ 1391(b), 1391(c), and 1400(b) because CalAmp resides in this Judicial District. CalAmp also has substantial additional activities

in this Judicial District as alleged herein. CalAmp has also engaged and continues to engage in infringing acts in this Judicial District such as alleged herein.

40. For Xirgo, venue is proper under 28 U.S.C. §§ 1391(b), 1391(c), and 1400(b) because Xirgo resides in this Judicial District. Xirgo also has substantial additional activities in this Judicial District as alleged herein. Xirgo has also engaged and continues to engage in infringing acts in this Judicial District such as alleged herein.

41. For Laird, venue is proper under 28 U.S.C. §§ 1391(b), 1391(c), and 1400(b) because Laird resides in this Judicial District. Laird also has substantial additional activities in this Judicial District as alleged herein. Laird has also engaged and continues to engage in infringing acts in this Judicial District such as alleged herein.

THE ASSERTED PATENTS

42. This action involves the following patents: Nos. 7,944,935 ("'935 Patent"), 7,554,943 ("'943 Patent"), 8,199,711 ("'711 Patent"), and 7,831,271 ("'271 Patent") (collectively, "the Asserted Patents").

THALES'S AND THE OTHER DEFENDANTS' KNOWLEDGE OF THE ASSERTED PATENTS

43. For years, Philips has repeatedly offered to license rights to its world-wide portfolio that includes the Asserted Patents (and others) to Thales, but Thales has refused to accept Philips's offers to license.

44. For example, at least as early as December 11, 2015, Thales has had actual knowledge of the Asserted Patents. Having been put on notice of infringement of such pending and issued rights at that time, Thales has been aware of its infringement for more than half a decade or has been willfully blind to such infringement.

45. Thales has followed a path of willful and wonton infringement leveraging Philips attempts to license in a manner to prolong its use of the technology without paying, all along collecting vast sums of money in revenues through infringement in a manner consistent with an "efficient infringement" tactical approach.

46. Philips has offered to license rights to its world-wide portfolio that includes the Asserted Patents (and others) to CalAmp, but CalAmp has declined to accept Philips's offers to license. For example, at least as early as October 19, 2020, CalAmp has had actual knowledge of the Asserted Patents. Having been put on notice of infringement of such pending and issued rights at that time, CalAmp has been aware of its infringement and has followed a path of willful and wonton infringement.

47. Philips has offered to license rights to its world-wide portfolio that includes the Asserted Patents (and others) to Xirgo, but Xirgo has declined to accept Philips's offers to license. For example, at least as early as October 19, 2020, Xirgo has had actual knowledge of the Asserted Patents. Having been put on notice of infringement of such pending and issued rights at that time, Xirgo has been aware of its infringement and has followed a path of willful and wonton infringement.

48. Philips has offered to license rights to its world-wide portfolio that includes the Asserted Patents (and others) to Laird, but Laird has declined to accept Philips's offers to license. For example, at least as early as November 12, 2020, Laird has had actual knowledge of the Asserted Patents. Having been put on notice of infringement of such pending and issued rights at that time, Laird has been aware of its infringement and has followed a path of willful and wonton infringement.

The Accused Products

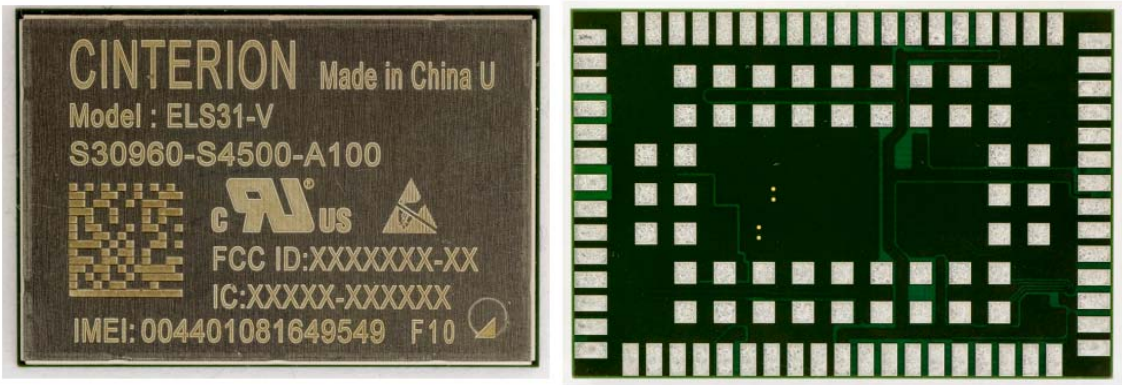
49. Thales and the other defendants are, and have been, engaged in manufacturing and/or having manufactured, selling and/or offering for sale within the United States, using in the United States, and/or importing into the United States cellular communication modules providing functionality covered by one or more claims of the Asserted Patents.

50. Non-limiting examples of the infringing products manufactured, sold, offered for sale, used, and/or imported by or for Thales and the other defendants include, but are not limited to, cellular communication modules models EH5-US, EHS6, ELS61-US, PLS62-W, ELS31-V, CL31, ELS31, ELS61, ELS81, EMS31, ENS22, EXS62-W, EXS82-W, mPLAS9, mPLS62, mPLS8, PLAS9, PLPS9, PLS62, PLS8, TX62 and the like, and IoT products incorporating such cellular communication modules such as Thales's customers Xirgo model XT6372R, Laird model IG60, and CalAmp model HMU-3640LA, and the like, including, but not limited to, for example, as set forth in Thales's catalog. https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/els61-usa.

51. Below are photos of the ELS61-US, as provided to the United States Federal Communications Commission ("FCC"), paving the way towards sales, marketing, use and implementation in the United States and on the U.S. cellular network:

52. Below are photos of the PLS62-W, as provided to the FCC, further paving the way towards sales, marketing, use and implementation in the United States and on the U.S. cellular network:

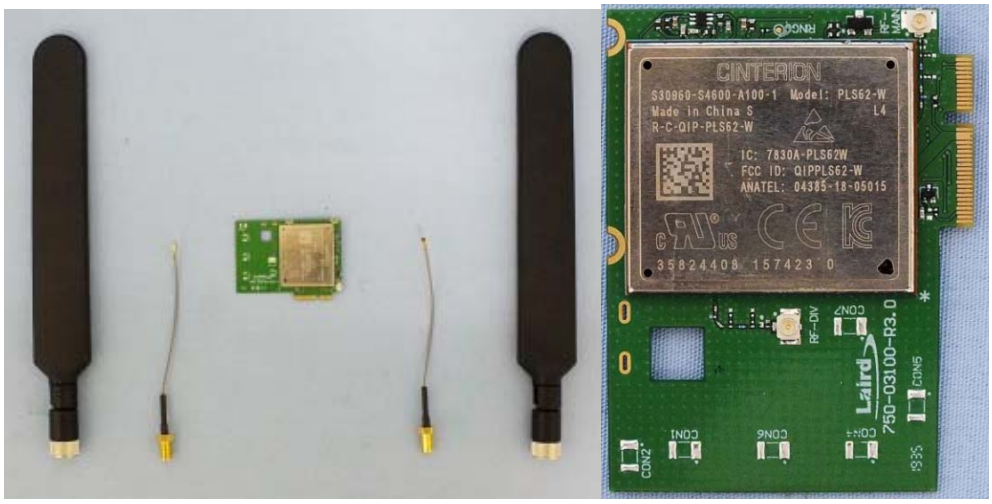
53. Below are photos of the ELS31-V, as provided to the FCC, further paving the way towards sales, marketing, use and implementation in the United States and on the U.S. cellular network:



54. CalAmp's HMU-3640LA utilizes a Thales ELS61-US to connect with the US cellular network. Below are photos of CalAmp's HMU-3640LA, as provided to the FCC:

55. Xirgo's XT6372R utilizes a Thales ELS31-V to connect with the US cellular network. Below are photos of Xirgo's XT6264, as provided to the FCC:

56. Laird's IG60 utilizes a Thales PLS62-W to connect with the U.S. cellular network. Below are photos of Laird's IG60, as provided to the FCC:



57. Thales has sought and obtained certification of its modules (including Thales's ELS61-US, PLS62-W, ELS31-V and the like) from a number of carriers, including AT&T and Verizon among others, for use of Thales's modules on the U.S. cellular network including LTE and HSPA+ wireless networks. *See, e.g.*, https://opendevelopment.verizonwireless.com/design-and-build/approved-modules; https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/els61-usa; https://iotdevices.att.com/modules.aspx.

The '935 Patent

58. Philips is the owner of all rights, title and interest – including the right to bring a suit for patent infringement – in the '935 patent, entitled "Method for Priority Based Queuing and Assembling of Packets" (copy attached as Exhibit A, hereto). The '935 patent stems from an international patent application filed on November 4, 2005.

59. Among other things, the '935 patent provides that:

> There is a requirement [] to multiplex data packets having different priorities. For example, in UMTS for an Enhanced Uplink Data Channel (E-DHC), at the Medium Access Control (MAC) layer data packets, referred to as MAC-d Protocol Data Units or MAC-d PDUs, are grouped together for transmission to form larger enhanced PDUs termed MAC-e PDUs. When there is a continuous supply of MAC-d PDUs having the highest priority, the MAC-e PDUs can be filled with these high priority MAC-d PDUs, but where there are

> fewer high priority MAC-d PDUs to be transmitted, any space capacity in the MAC-e PDUs can be used to transmit waiting MAC-d PDUs having a lower priority. In this way, MAC-e PDU can accommodate a combination of different priorities of MAC-d PDU.
> ….

(Ex. A at 1:14-26.)

60. The ’935 patent further provides:

> In UMTS, the process of multiplexing of MAC-d PDUs into MAC-e PDUs is responsible for ensuring that MAC-d flow priorities are taken into account in an appropriate way. In the simplest case, this multiplexing could simply follow the priorities directly. … [However,] if we have continuous high priority MAC-d PDUs arriving for transmission, then the transmission of the simultaneously-arriving lower-priority MAC-d PDUs will be delayed. Strictly priority-based multiplexing of MAC-d PDUs into the MAC-e PDUs will not always lead to the optimal filling of the MAC-e PDUs and would be too inflexible to satisfy all QoS (Quality of Service) requirements for PDUs, such as delay requirements and bit rate requirements. For example, queues containing low priority PDUs may experience starvation, being starved of opportunities to transmit their PDUs.
> ….

(*Id.* at 1:27-47.)

61. Accordingly, the ’935 patent thus notes that “[a]n object of the invention is to enable flexible and efficient multiplexing of data packets.” (*Id.* at 1:48-49.) The ’935 patent explains, for example, that data packets can have different assigned priorities, and a group of data packets can be assembled such that one portion contains data packets selected from one or more queues according to a first rule and another portion contains data packets selected from one or more queues according to a second rule. (E.g., *id.* at Abstract; 1:50-59; 2:1-9.) Further, the ’935 patent explains that selection for the second group, for example, may be from queues that have experienced a delay longer than a threshold delay or from queues that more data awaiting than a threshold amount of data. (Eg., *id.* at Abstract; 2:10-16.) The size of each portion of the data packets can be adapted according to the prevailing mix of priorities of the data packets, or according to the delay experienced by data in each queue relative to a delay criterion for the respective queue, etc. (E.g., *id.* at 2:17-30.) The ’935 patent provides various technical benefits

such as "flexibility for appropriate handling of priorities, guaranteed bit-rates and starvation scenarios by dividing a data packet, such as a MAC-e PDU, that is large enough to accommodate a plurality of Smaller data packets, such as MAC-d PDUs, into at least two portions and enabling different multiplexing rules to be used for the different portions." (*Id.* at 1:60-66.) The '935 patent further explains that the approaches can enable efficient use of transmission capacity, can assist with compliance with a QoS delay requirement, and can reduce the likelihood of buffer overrun in which a queue length exceeds the available buffer size. (*Id.* at 2:14-16; 2:20-22; 2:28-30.)

62. Various technological solutions to the difficult problems are set forth in the '935 patent and its claims, including claims 1-4, 9-12 and 17. The claims of the '935 patent were not well known, routine or conventional at the time of the inventions and when viewed as a whole, including as an ordered combination, address difficult technical challenges in the field of radio communications. A person of ordinary skill in the art would have recognized this fact and would have recognized that the claims represent specific improvements over the prior art and prior existing systems and methods in the field of radio communications. A person of ordinary skill in the art would have further understood that the claims of the '935 patent, including claims 1-4, 9-12 and 17, are not directed to an abstract idea, nor are they directed to a disembodied concept or pre-existing fundamental truth, but instead are directed to real-world applications in the field of radio communications, including, for example, physical devices such as an apparatus for multiplexing data packets having different assigned priorities that may include an input having an input buffer for storing the received data packets, a storage medium that includes a bank of a plurality of queue stores that is coupled to the input medium via a routing means such as a switch, and an output

buffer for storing the data packets prior to transmission on an output having at least a first portion and a second portion.

63. Furthermore, a person of ordinary skill in the art would have understood that the claims of the '935 patent, including claim 1-4, 9-12 and 17, did not pre-empt any field, but instead are improvements in the technology of radio communications.

64. At the time of the inventions claimed in the '935 patent, a person of ordinary skill in the art would have recognized that there were, for example, no radio communications systems that multiplexed data packets having different assigned priorities in the manner specified in some of the various claims of the '935 patent, which in prior systems could not be flexibly and efficiently multiplexed for transmission, particularly when the total resources available for the transmission of the data packets was not known prior to the multiplexing. A person of ordinary skill in the art would have recognized that the claims of the '935 patent are directed to such specific improvements in the field of radio communications and that the claims are not directed to the implementation of pre-existing practices.

65. As such, a person of ordinary skill in the art would understand that the claims of the '935 patent are rooted in computer technology – i.e., radio communications – and comprise technological improvements of prior technologies in order to provide new functionality and overcome inefficiencies in the transmission of data, including those noted above. Accordingly, the claimed solutions amount to an inventive concept for the particular problems noted above, as a person of ordinary skill in the art would have understood.

66. Consistent with 35 U.S.C. § 282 and the limitations of the claims of the '935 patent, a person of ordinary skill in the art also would have understood that each claim of the '935 patent (independent or dependent) relates to a separate invention distinct from other claims.

The '943 Patent

67. Philips is the owner of all rights, title and interest – including the right to bring a suit for patent infringement – in the '943 patent, entitled "Radio Communication System" (copy attached as Exhibit B, hereto). The '943 patent stems from a foreign patent application filed on February 8, 2002.

68. Among other things, the '943 patent provides:

> There is a growing demand in the mobile communication area for a system having the ability to download large blocks of data to a Mobile Station (MS) on demand at a reasonable rate. … To meet this requirement in [the Universal Mobile Telecommunication System], a High-Speed Downlink Packet Access (HSDPA) scheme is being developed which may facilitate transfer of packet data to a mobile station at up to 4 Mbps. A particular problem with the design of the HSDPA scheme is the mechanism for informing a MS of the presence of a data packet for it to receive and providing information relating to the packet (typically including details of the particular transmission scheme employed, for example spreading code, modulation scheme and coding scheme). As currently proposed, this information is signaled on one of four available downlink control channels, distinguished by their spreading codes. The MS is instructed to decode one of the control channels by a two-bit indicator signal which is transmitted on a low data rate dedicated downlink channel (the signal being inserted by puncturing). The MS then monitors the same control channel for subsequent packets in a burst.

(Ex. B at 1:16-40.)

69. The '943 patent further provides:

> Use of the indicator signal is intended to reduce the complexity of the MS and its power consumption, as the MS only needs to monitor the dedicated downlink channel for the indicator signal instead of having to receive continuously all four control channels. However, there are significant drawbacks with the use of the indicator signal. One drawback is that an additional slot format is required for the dedicated downlink channel (to accommodate the extra signal), which adds complexity. Another drawback is that the transmission power required for the indicator signal can be relatively high to ensure reliable reception of the signal even at the edge of a cell. One solution which avoids the use of an indicator

> signal is for each MS to be allocated one of the four control channels, which it then continuously monitors. However, if more than one MS is allocated to the same control channel the flexibility of packet scheduling is restricted. Another solution is the provision of one control channel for each MS; however, the potentially large number of channels required could use up excessive system resources.

(*Id.* at 1:42-60.)

70. The '943 patent thus notes that "[a]n object of the present invention is to provide an improved arrangement which does not monitor an indicator signal or provision of a large number of control channels." (*Id.* at 1:65-67.) The '943 patent describes, for example, that there can be a data channel for the transmission of data packets from a primary station to a secondary station, and there can be control channels that signal control information related to the data packets. (*Id.* at 2:1-6.) A primary station can, for example, allocate one of the control channels to a secondary station, and the allocated control channel can be changed according to a defined sequence. (*Id.* at 2:6-10.) The currently allocated control channel can be monitored to determine information about packet transmissions, for example. (*Id.* at 2:10-12.) The patent explains that "[b]y changing the control channel allocation, system performance is greatly enhanced under worst-case conditions without the need for an indicator signal, which introduces significant extra complexity." (*Id.* at 2:13-16.)

71. Various technological solutions to the difficult problems are set forth in the '943 patent and its claims, including claims 12 and 15. The claims of the '943 patent were not well known, routine or conventional at the time of the inventions and when viewed as a whole, including as an ordered combination, address difficult technical challenges in the field of radio communications. A person of ordinary skill in the art would have recognized this fact and would have recognized that the claims represent specific improvements over the prior art and prior existing systems and methods in the field of radio communications. A person of ordinary skill in

the art would have further understood that the claims of the '943 patent, including claims 12 and 15, are not directed to an abstract idea, nor are they directed to a disembodied concept or pre-existing fundamental truth, but instead are directed to real-world applications in the field of radio communications, including, for example, physical devices such as a primary station and secondary station, which are used in ways that are concrete systems that improved radio communications.

72. Furthermore, a person of ordinary skill in the art would have understood that the claims of the '943 patent, including claims 12 and 15, did not pre-empt any field, but instead are improvements in the technology of radio communications.

73. At the time of the inventions claimed in the '943 patent, a person of ordinary skill in the art would have recognized that there were, for example, no radio communications systems that allocated the use of control channels in the manner specified in some of the various claims of the '943 patent, which in prior systems used indicator signals or allocated a single control channel to each secondary station. The claims of the '943 patent allocate the use of control channels to secondary stations according to a sequence that is known to the secondary station, such that the secondary station is able to monitor the allocated control channel to determine information about packet transmissions from the primary station, thereby reducing the complexity of the system and improving the efficiency of the transmission of data. A person of ordinary skill in the art would have recognized that the claims of the '943 patent are directed to such specific improvements in the field of radio communications and that the claims are not directed to the implementation of pre-existing practices.

74. A person of ordinary skill in the art would understand that the claims of the '943 patent are rooted in computer technology – i.e., radio communications – and comprise technological improvements of prior technologies in order to provide new functionality and

overcome inefficiencies, including those noted above. The claimed solutions amount to an inventive concept for the particular problems noted above, as a person of ordinary skill in the art would have understood.

75. Consistent with 35 U.S.C. § 282 and the limitations of the claims of the '943 patent, a person of ordinary skill in the art also would have understood that each claim of the '943 patent (independent or dependent) relates to a separate invention distinct from other claims.

The '711 Patent

76. Philips is the owner of all rights, title and interest – including the right to bring a suit for patent infringement – in the '711 patent, entitled "Radio Communication System" (copy attached as Exhibit C, hereto). The '711 patent stems from a patent application filed on February 8, 2002, and is a continuation of the application that gave rise to the '943 patent.

77. The '711 patent shares a common specification with the '943 patent and, therefore, Philips cites to the same portions of the '711 patent as above-cited for the '943 patent.

78. Among other things, the '711 patent provides:

> There is a growing demand in the mobile communication area for a system having the ability to download large blocks of data to a Mobile Station (MS) on demand at a reasonable rate. … To meet this requirement in [the Universal Mobile Telecommunication System], a High-Speed Downlink Packet Access (HSDPA) scheme is being developed which may facilitate transfer of packet data to a mobile station at up to 4 Mbps. A particular problem with the design of the HSDPA scheme is the mechanism for informing a MS of the presence of a data packet for it to receive and providing information relating to the packet (typically including details of the particular transmission scheme employed, for example spreading code, modulation scheme and coding scheme). As currently proposed, this information is signaled on one of four available downlink control channels, distinguished by their spreading codes. The MS is instructed to decode one of the control channels by a two-bit indicator signal which is transmitted on a low data rate dedicated downlink channel (the signal being inserted by

> puncturing). The MS then monitors the same control channel for subsequent packets in a burst.

(Ex. C at 1:25-49.)

79. The '711 patent further provides:

> Use of the indicator signal is intended to reduce the complexity of the MS and its power consumption, as the MS only needs to monitor the dedicated downlink channel for the indicator signal instead of having to receive continuously all four control channels. However, there are significant drawbacks with the use of the indicator signal. One drawback is that an additional slot format is required for the dedicated downlink channel (to accommodate the extra signal), which adds complexity. Another drawback is that the transmission power required for the indicator signal can be relatively high to ensure reliable reception of the signal even at the edge of a cell. One solution which avoids the use of an indicator signal is for each MS to be allocated one of the four control channels, which it then continuously monitors. However, if more than one MS is allocated to the same control channel the flexibility of packet scheduling is restricted. Another solution is the provision of one control channel for each MS; however, the potentially large number of channels required could use up excessive system resources.

(*Id.* at 1:51-2:3.)

80. The '711 patent thus notes that "[a]n object of the present invention is to provide an improved arrangement which does not monitor an indicator signal or provision of a large number of control channels." (*Id.* at 2:7-9.) The '711 patent describes, for example, that there can be a data channel for the transmission of data packets from a primary station to a secondary station, and there can be control channels that signal control information related to the data packets. (*Id.* at 2:10-16.) A primary station can, for example, allocate one of the control channels to a secondary station, and the allocated control channel can be changed according to a defined sequence. (*Id.* at 2:16-20.) The currently allocated control channel can be monitored to determine information about packet transmissions, for example. (*Id.* at 2:20-22.) The patent explains that "[b]y changing the control channel allocation, system performance is greatly enhanced under

worst-case conditions without the need for an indicator signal, which introduces significant extra complexity." (*Id.* at 2:23-26.)

81. Various technological solutions to the difficult problems are set forth in the '711 patent and its claims, including claims 9 and 12. The claims of the '711 patent were not well known, routine or conventional at the time of the inventions and when viewed as a whole, including as an ordered combination, address difficult technical challenges in the field of radio communications. A person of ordinary skill in the art would have recognized this fact and would have recognized that the claims represent specific improvements over the prior art and prior existing systems and methods in the field of radio communications. A person of ordinary skill in the art would have further understood that the claims of the '711 patent, including claims 9 and 12, are not directed to an abstract idea, nor are they directed to a disembodied concept or pre-existing fundamental truth, but instead are directed to real-world applications in the field of radio communications, including, for example, physical devices such as a primary station and secondary station, which are used in ways that are concrete systems that improved radio communications.

82. Furthermore, a person of ordinary skill in the art would have understood that the claims of the '711 patent, including claims 9 and 12, did not pre-empt any field, but instead are improvements in the technology of radio communications.

83. At the time of the inventions claimed in the '711 patent, a person of ordinary skill in the art would have recognized that there were, for example, no radio communications systems that allocated the use of control channels in the manner specified in some of the various claims of the '711 patent, which in prior systems used indicator signals or allocated a single control channel to each secondary station. The claims of the '711 patent allocate the use of control channels to secondary stations according to a plurality of respective defined sequences that are known to the

secondary station, such that the secondary station is able to monitor the allocated control channel to determine information about packet transmissions from the primary station, thereby reducing the complexity of the system and improving the efficiency of the transmission of data. A person of ordinary skill in the art would have recognized that the claims of the '711 patent are directed to such specific improvements in the field of radio communications and that the claims are not directed to the implementation of pre-existing practices.

84. A person of ordinary skill in the art would understand that the claims of the '711 patent are rooted in computer technology – i.e., radio communications – and comprise technological improvements of prior technologies in order to provide new functionality and overcome inefficiencies, including those noted above. The claimed solutions amount to an inventive concept for the particular problems noted above, as a person of ordinary skill in the art would have understood.

85. Consistent with 35 U.S.C. § 282 and the limitations of the claims of the '711 patent, a person of ordinary skill in the art also would have understood that each claim of the '711 patent (independent or dependent) relates to a separate invention distinct from other claims.

The '271 Patent

86. Philips is the owner of all rights, title and interest – including the right to bring a suit for patent infringement – in the '271 patent, entitled "Communication System and Method of Operating the Communicating System" (copy attached as Exhibit D, hereto). The '271 patent stems from a foreign patent application filed on August 11, 2003.

87. Among other things, the '271 patent provides:

> Terminals in mobile communication systems usually have a maximum transmit power limit, which may be set by physical constraints or in response to an instruction received from a controller. In a communication system while a terminal is

> transmitting a fist signal, it is sometimes necessary to transmit simultaneously additional signals which would require the terminal's maximum transmit power limit to be exceeded. In such cases, a variety of approaches may be taken, including reducing the transmit power of the first signal in order to allow sufficient power for the additional signal(s) to be transmitted without breaching the maximum power limit or switching-off part or all of the first signal in order to allow the additional signal(s) to be transmitted.

(Ex. D at 1:11-24.)

88. The '271 patent further provides:

> In some systems, it is only possible to execute the reduction in transmit power of the first signal at particular time instants, such as a frame- or timeslot-boundary. These time instants may not correspond to the times at which the transmission of the additional signal(s) must commence. A method of overcoming this problem is to execute a reduction in transmit power in advance of the transmission of the additional signal(s). In such situations, the exact nature of the additional signal(s) may not yet be known at the time when the reduction in transmit power of the first signal has to be executed because, for example, there is insufficient time for the terminal to evaluate a critical feature, such as a CRC (cyclic redundancy check) in a received signal. Different types of additional signal may have different transmit power requirements.

(*Id.* at 1:25-39.)

89. The '271 patent thus notes that "[a]n object of the present invention is to be able to transmit an additional signal in a timely manner whilst not exceeding a predetermined maximum power limit." (*Id.* at 1:40-42.) The patent explains that, for example, when a second station transmits a first signal to a first station, the power of the signal may not exceed a predetermined level. (*Id.* at 1:43-49.) The patent further explains that, for example, in response to the second station wishing to transmit additional signals, the transmit power of the first signal is scaled by an amount which takes into account the greater or greatest power requirement of all the set of possible additional signals to be transmitted subsequently. (*Id.* at 1:49-54.) The patent explains that the invention "avoids setting a requirement on the terminal to make an earlier decision about which

type of additional signal is to be transmitted, or to make a reduction in power of the first signal at some time other than the most convenient or required instant." (*Id.* at 2:14-18.)

90. Various technological solutions to the difficult problems are set forth in the '271 patent and its claims, including claims 1-8. The claims of the '271 patent were not well known, routine or conventional at the time of the inventions and when viewed as a whole, including as an ordered combination, address difficult technical challenges in the field of radio communications. A person of ordinary skill in the art would have recognized this fact and would have recognized that the claims represent specific improvements over the prior art and prior existing systems and methods in the field of radio communications. A person of ordinary skill in the art would have further understood that the claims of the '271 patent, including claims 1-8, are not directed to an abstract idea, nor are they directed to a disembodied concept or pre-existing fundamental truth, but instead are directed to real-world applications in the field of radio communications, including, for example, physical devices such as a base station and a mobile station, with controllers, antennas and transceivers, which are used in ways that are concrete systems that improved radio communications.

91. Furthermore, a person of ordinary skill in the art would have understood that the claims of the '271 patent, including claims 1-8, did not pre-empt any field, but instead are improvements in the technology of radio communications.

92. At the time of the inventions claimed in the '271 patent, a person of ordinary skill in the art would have recognized that there were, for example, no radio communications systems that included a power control means for controlling the transmitted power level of a first signal to be transmitted to a first station in the manner specified in some of the various claims of the '271 patent, which power control means in prior systems could not scale the transmit power of the first

signal by an amount which takes into account the greater or greatest power requirement of all of the set of the possible additional signals to be transmitted subsequently. A person of ordinary skill in the art would have recognized that the claims of the '271 patent are directed to such specific improvements in the field of radio communications and that the claims are not directed to the implementation of pre-existing practices.

93. A person of ordinary skill in the art would understand that the claims of the '271 patent are rooted in computer technology – i.e., radio communications – and comprise technological improvements of prior technologies in order to provide new functionality and overcome inefficiencies, including those noted above. The claimed solutions amount to an inventive concept for the particular problems noted above, as a person of ordinary skill in the art would have understood.

94. Consistent with 35 U.S.C. § 282 and the limitations of the claims of the '271 patent, a person of ordinary skill in the art also would have understood that each claim of the '271 patent (independent or dependent) relates to a separate invention distinct from other claims.

Count I
Infringement of U.S. Patent No. 7,944,935

95. Philips repeats and realleges the foregoing paragraphs.

96. The '935 patent is valid and enforceable.

97. Thales, CalAmp, Xirgo and Laird have directly and/or indirectly infringed, either literally and/or under the doctrine of equivalents, one or more claims of the '935 patent, in violation of one or more subsections of 35 U.S.C. § 271 – including at least one or more of subsections § 271(a), (b), (c), (f) and (g) – by making, using, importing, selling, and/or offering to sell products covered by one or more claims of the '935 patent within the United States, and/or by contributing to or inducing such infringement. The Accused Products include, but are not limited

to certain IoT module models, including ELS61-US, PLS62-W, ELS31-V, CL31, ELS31, ELS61, ELS81, EMS31, ENS22, EXS62-W, EXS82-W, mPLAS9, mPLS62, mPLS8, PLAS9, PLPS9, PLS62, PLS8, TX62 and IoT products incorporating the cellular communication modules including Thales' customer CalAmp model HMU-3640LA, Laird model IG60, and Xirgo model XT6372R, and the like.

98. In addition to direct infringement, Thales, CalAmp, Xirgo and Laird have actively induced infringement of the '935 patent, at least by intentionally encouraging the direct infringement of one or more claims of the '935 patent by others. Prior to this action, Thales, CalAmp, Xirgo and Laird had knowledge of and intended to cause direct infringement by others and/or Thales, CalAmp, Xirgo and Laird were willfully blind to the existence of the '935 patent and such infringement. For example, as early as December 11, 2015, Thales received a letter from Philips identifying the '935 patent; as early as October 19, 2020, CalAmp received a letter from Philips identifying the '935 patent; as early as October 19, 2020, Xirgo received a letter from Philips identifying the '935 patent; and as early as November 12, 2020, Laird received a letter from Philips identifying the '935 patent. Thales, CalAmp, Xirgo and Laird provide instructions, user manuals, advertising, and/or marketing materials which facilitate, direct, or encourage such infringing use with knowledge thereof. End users of devices with the Accused Products in them test and/or operate the devices in the United States, thereby also performing the claimed methods and directly infringing claims of the '935 patent.

99. Thales, CalAmp, Xirgo and Laird are also contributory infringers of one or more claims of the '935 patent, at least because they sell, offer to sell, or import into the U.S. a material or apparatus for use in practicing subject matter claimed in the '935 patent, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in such

infringement, and not a staple article or commodity of commerce suitable for substantial non-infringing use. The Accused Products have no substantial non-infringing use. Prior to this action, Thales, CalAmp, Xirgo and Laird had knowledge of and intended to cause direct infringement by others and/or Thales, CalAmp, Xirgo and Laird were willfully blind to the existence of the '935 patent and such infringement. For example, as early as December 11, 2015, Thales received a letter from Philips identifying the '935 patent; as early as October 19, 2020, CalAmp received a letter from Philips identifying the '935 patent; as early as October 19, 2020, Xirgo received a letter from Philips identifying the '935 patent; and as early as November 12, 2020, Laird received a letter from Philips identifying the '935 patent.

100. For example, the Accused Products infringe at least claims 1-4, 9-12 and 17 of the '935 patent.

101. With respect to independent claim 1, each Accused Product is used as a method of multiplexing data packets having different assigned priorities.

102. In the method of each Accused Product, the method includes receiving data packets.

103. In the method of each Accused Product, the method includes operating a queue for each different priority of data packet.

104. In the method of each Accused Product, the method includes assembling a group of the data packets wherein a first portion of the group is populated with data packets selected from one or more of the queues according to a first rule and a second portion of the group is populated with data packets selected from one or more of the queues according to a second rule.

105. In the method of each Accused Product, the method includes transmitting the group, wherein the size of the first and second portions is adapted according to the delay experienced by data in each queue relative to a delay criterion for the respective queue.

106. With respect to dependent claim 2, in the method of each Accused Product, the method includes that according to the first rule data packets are selected from the queue containing the highest priority of the data packets.

107. With respect to dependent claim 3, in the method of each Accused Product, the method includes that according to the second rule data packets are selected from one or more of the queues containing data packets having a lower priority than the highest priority.

108. With respect to dependent claim 4, in the method of each Accused Product, the method includes that according to the second rule data packets are selected from any queue, except at least the highest priority queue, for which the data packets have experienced a delay longer than a threshold delay.

109. With respect to independent claim 9, each Accused Product is a multiplexing apparatus for multiplexing data packets having different assigned priorities.

110. Each Accused Product includes a means for receiving data packets.

111. Each Accused Product includes a means for operating a queue store for each different priority of data packet.

112. Each Accused Product includes a means for assembling a group of the data packets wherein a first portion of the group is populated with data packets by selecting data packets from one or more of the queue stores according to a first rule and a second portion of the group is populated with data packets by selecting data packets from one or more of the queue stores according to a second rule.

113. Each Accused Product includes a means for transmitting the group, wherein the size of the first and second portions is adapted according to the delay experienced by data in each queue relative to a delay criterion for the respective queue.

114. With respect to dependent claim 10, in each Accused Product, according to the first rule data packets are selected from the queue store containing the highest priority of the data packets.

115. With respect to dependent claim 11, in each Accused Product, according to the second rule data packets are selected from one or more of the queue stores containing data packets having a lower priority than the highest priority.

116. With respect to dependent claim 12, in each Accused Product, according to the second rule data packets are selected from any queue store, except at least the highest priority queue store, for which the data packets have experienced a delay longer than a threshold delay.

117. With respect to independent claim 17, each Accused Product is a communication terminal comprising the multiplexing apparatus as claimed in claim 9.

118. The Accused Products practice certain LTE standards, including as set forth in 3GPP TS 36.321 and 3GPP TS 36.331, as described below, including functionality infringing the '935 patent.

119. With respect to claims 1 and 9, the Accused Products perform a microprocessor-based method of multiplexing data packets having different assigned priorities (claim 1), and the Accused Products are multiplexing apparatuses for multiplexing data packets having different assigned priorities (claim 9). As set forth above, as an example, ELS61-US, PLS62-W, and ELS31-V have been registered by Thales at the FCC for use in the U.S. cellular communication network. Also, for example, the ELS6-US is indicated to be "LTE (FDD) 3GPP Rel.9 Compliant,"

the PLS62-W is indicated to be "3GPP Rel.9 Compliant," and the ELS31-V is indicated to be "LTE (FDD) 3GPP Rel. 9+." *See* https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/els61-usa (Thales_Cinterion_ELS61_Datasheet.pdf); https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/pls62-w (Thales_Cinterion_PLS62_Datasheet.pdf); https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/els31-v (Thales_Cinterion_ELS31_Datasheet.pdf). Relative to multiplexing and assembly, "The Logical Channel Prioritization procedure is applied when a new transmission is performed." *See* 3GPP Technical Specification (TS) 36.321 § 5.4.3 (3GPP Technical Specifications are published by 3GPP, at www.3GPP.org).

120. The Accused Products perform a method of multiplexing that includes receiving data packets (claim 1), and the Accused Products are multiplexing apparatuses for multiplexing data packets having different assigned priorities (claim 9), as shown in 3GPP TS 36.321. Packets are received from higher layers in the protocol stack. *See* 3GPP TS 36.321 § 5.4.3.1 ("RRC controls the scheduling of uplink data by signalling for each logical channel: *priority* where an increasing *priority* value indicates a lower priority level.")

121. The Accused Products perform a method of multiplexing that includes operating a queue for each different priority of data packet (claim 1), and the Accused Products include means for receiving data packets, and the Accused Products include and the Accused Products include a means for operating a queue store for each different priority of data packet (claim 9), as shown in 3GPP TS 36.321. "RRC controls the scheduling of uplink data by signalling for each logical channel: *priority* where an increasing *priority* value indicates a lower priority level,

prioritisedBitRate which sets the Prioritized Bit Rate (PBR), *bucketSizeDuration* which sets the Bucket Size Duration (BSD). The UE shall maintain a variable Bj for each logical channel j." *See* 3GPP TS 36.321 § 5.4.3.1.

122. The Accused Products perform a method of multiplexing that includes assembling a group of the data packets wherein a first portion of the group is populated with data packets selected from one or more of the queues according to a first rule and a second portion of the group is populated with data packets selected from one or more of the queues according to a second rule (claim 1), and the Accused Products include a means for assembling a group of the data packets wherein a first portion of the group is populated with data packets by selecting data packets from one or more of the queue stores according to a first rule and a second portion of the group is populated with data packets by selecting data packets from one or more of the queue stores according to a second rule (claim 9), as shown in 3GPP TS 36.321:

"The UE shall perform the following Logical Channel Prioritization procedure when a new transmission is performed:

- The UE shall allocate resources to the logical channels in the following steps:
  - Step 1: All the logical channels with Bj > 0 are allocated resources in a decreasing priority order. If the PBR of a radio bearer is set to "infinity", the UE shall allocate resources for all the data that is available for transmission on the radio bearer before meeting the PBR of the lower priority radio bearer(s);
  - Step 2: the UE shall decrement Bj by the total size of MAC SDUs served to logical channel j in Step 1

NOTE: The value of Bj can be negative.

  - Step 3: if any resources remain, all the logical channels are served in a strict decreasing priority order (regardless of the value of Bj) until either the data for that logical channel or the UL grant is exhausted, whichever comes first. Logical channels configured with equal priority should be served equally." (TS 36.321 § 5.4.3.1)

123. 3GPP TS 36.321 further provides: "The Buffer Status reporting procedure is used to provide the serving eNodeB with information about the amount of data available for transmission in the UL buffers of the UE." *See* 3GPP TS 36.321 § 5.4.5 (emphasis added).

124. The Accused Products perform a method of multiplexing that includes transmitting the group, wherein the size of the first and second portions is adapted according to the

delay experienced by data in each queue relative to a delay criterion for the respective queue (claim 1), and the Accused Products include a means for transmitting the group, wherein the size of the first and second portions is adapted according to the delay experienced by data in each queue relative to a delay criterion for the respective queue (claim 9), as shown in 3GPP TS 36.321 and 3GPP TS 36.331. 3GPP TS 36.321 provides:

> The Logical Channel Prioritization procedure is applied when a new transmission is performed.
>
> RRC controls the scheduling of uplink data by signalling for each logical channel: *priority* where an increasing priority value indicates a lower priority level, *prioritisedBitRate* which sets the Prioritized Bit Rate (PBR), *bucketSizeDuration* which sets the Bucket Size Duration (BSD).
>
> The UE shall maintain a variable Bj for each logical channel j. Bj shall be initialized to zero when the related logical channel is established, and incremented by the product PBR × TTI duration for each TTI, where PBR is Prioritized Bit Rate of logical channel j. However, the value of Bj can never exceed the bucket size and if the value of Bj is larger than the bucket size of logical channel j, it shall be set to the bucket size. The bucket size of a logical channel is equal to PBR × BSD, where PBR and BSD are configured by upper layers.

3GPP TS 36.321 § 5.4.3.1.

125. 3GPP TS 36.331 further provides:

– *LogicalChannelConfig*

The IE *LogicalChannelConfig* is used to configure the logical channel parameters.

***LogicalChannelConfig* information element**

```
-- ASN1START

LogicalChannelConfig ::=            SEQUENCE {
    ul-SpecificParameters               SEQUENCE {
        priority                            INTEGER (1..16),
        prioritisedBitRate                  ENUMERATED {
                                                kBps0, kBps8, kBps16, kBps32, kBps64, kBps128,
                                                kBps256, infinity, spare8, spare7, spare6,
                                                spare5, spare4, spare3, spare2, spare1},
        bucketSizeDuration                  ENUMERATED {
                                                ms50, ms100, ms150, ms300, ms500, ms1000, spare2,
                                                spare1},
        logicalChannelGroup                 INTEGER (0..3)          OPTIONAL            -- Need OR
    }       OPTIONAL,                                                                   -- Cond UL
    ...,
    [[  logicalChannelSR-Mask-r9            ENUMERATED {setup}      OPTIONAL        -- Cond SRmask
    ]]
}

-- ASN1STOP
```

LogicalChannelConfig field descriptions
priority Logical channel priority in TS 36.321 [6]. Value is an integer.
prioritisedBitRate Prioritized Bit Rate for logical channel prioritization in TS 36.321 [6]. Value in kilobytes/second. Value kBps0 corresponds to 0 kB/second, kBps8 corresponds to 8 kB/second, kBps16 corresponds to 16 kB/second and so on. Infinity is the only applicable value for SRB1 and SRB2
bucketSizeDuration Bucket Size Duration for logical channel prioritization in TS 36.321 [6]. Value in milliseconds. Value ms50 corresponds to 50 ms, ms100 corresponds to 100 ms and so on.
logicalChannelGroup Mapping of logical channel to logical channel group for BSR reporting in TS 36.321 [6].
logicalChannelSR-Mask Controlling SR triggering on a logical channel basis when an uplink grant is configured. See TS 36.321 [6].

Conditional presence	Explanation
UL	The field is mandatory present for UL logical channels; otherwise it is not present.
SRmask	The field is optionally present if *ul-SpecificParameters* is present, need OR; otherwise it is not present.

See 3GPP TS 36.331 § 6.3.2.

126. With respect to claims 2 and 10, the Accused Products perform a method of multiplexing, wherein according to the first rule data packets are selected from the queue containing the highest priority of the data packets (claim 2), and the Accused Products provide that

according to the first rule data packets are selected from the queue store containing the highest priority of the data packets (claim 10), as shown in 3GPP TS 36.321 § 5.4.3.1 (Step 3, Bj ≤zero).

127. With respect to claims 3 and 11, the Accused Products perform a method of multiplexing, wherein according to the second rule data packets are selected from one or more of the queues containing data packets having a lower priority than the highest priority (claim 3), and the Accused Products provide that according to the second rule data packets are selected from one or more of the queue stores containing data packets having a lower priority than the highest priority (Claim 11), as shown in 3GPP TS 36.321 § 5.4.3.1 (Step 1, Bj >zero).

128. With respect to claims 4 and 12, the Accused Products perform a method of multiplexing, wherein according to the second rule data packets are selected from any queue, except at least the highest priority queue, for which the data packets have experienced a delay longer than a threshold delay (claim 4), and the Accused Products provide that according to the second rule data packets are selected from any queue store, except at least the highest priority queue store, for which the data packets have experienced a delay longer than a threshold delay (claim 12), as shown in 3GPP TS 36.321 and 3GPP TS 36.331. 3GPP TS 36.321 provides: "The UE shall maintain a variable Bj for each logical channel j. Bj shall be initialized to zero when the related logical channel is established, and incremented by the product PBR × TTI duration for each TTI, where PBR is Prioritized Bit Rate of logical channel j. However, the value of Bj can never exceed the bucket size and if the value of Bj is larger than the bucket size of logical channel j, it shall be set to the bucket size. The bucket size of a logical channel is equal to PBR × BSD, where PBR and BSD are configured by upper layers." *See* 3GPP TS 36.321 § 5.4.3.1; s*ee also* 3GPP TS 36.331 § 6.3.2.

129. With respect to claim 17, the Accused Products are a communication terminal comprising the multiplexing apparatus as claimed in claim 9, as shown in 3GPP TS 36.321: "The UE shall perform the following Logical Channel Prioritization procedure." *See* 3GPP TS 36.321 § 5.4.3.1.

Count II
Infringement of U.S. Patent No. 7,554,943

130. Philips repeats and realleges the foregoing paragraphs.

131. The '943 patent is valid and enforceable.

132. Thales, CalAmp, Xirgo and Laird have directly and/or indirectly infringed, either literally and/or under the doctrine of equivalents, one or more claims of the '943 patent, in violation of one or more subsections of 35 U.S.C. § 271 – including at least one or more of subsections § 271(a), (b), (c), (f) and (g) – by making, using, importing, selling, and/or offering to sell products covered by one or more claims of the '943 patent within the United States, and/or by contributing to or inducing such infringement. The Accused Products include, but are not limited to certain IoT module models, including ELS61-US, PLS62-W, ELS31-V, CL31, ELS31, ELS61, ELS81, EMS31, ENS22, EXS62-W, EXS82-W, mPLAS9, mPLS62, mPLS8, PLAS9, PLPS9, PLS62, PLS8, TX62 and IoT products incorporating the cellular communication modules including Thales' customer CalAmp model HMU-3640LA, Laird model IG60, and Xirgo model XT6372R, and the like.

133. In addition to direct infringement, Thales, CalAmp, Xirgo and Laird have actively induced infringement of the '943 patent, at least by intentionally encouraging the direct infringement of one or more claims of the '943 patent by others. Prior to this action, Thales, CalAmp, Xirgo and Laird had knowledge of and intended to cause direct infringement by others and/or Thales, CalAmp, Xirgo and Laird were willfully blind to the existence of the '943 patent

and such infringement. For example, as early as December 11, 2015, Thales received a letter from Philips identifying the '943 patent; as early as October 19, 2020, CalAmp received a letter from Philips identifying the '943 patent; as early as October 19, 2020, Xirgo received a letter from Philips identifying the '943 patent; and as early as November 12, 2020, Laird received a letter from Philips identifying the '943 patent. Thales, CalAmp, Xirgo and Laird provide instructions, user manuals, advertising, and/or marketing materials which facilitate, direct, or encourage such infringing use with knowledge thereof. End users of devices with the Accused Products in them test and/or operate the devices in the United States, thereby also performing the claimed methods and directly infringing claims of the '943 patent.

134. Thales, CalAmp, Xirgo and Laird are also contributory infringers of one or more claims of the '943 patent, at least because they sell, offer to sell, or import into the U.S. a material or apparatus for use in practicing subject matter claimed in the '943 patent, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in such infringement, and not a staple article or commodity of commerce suitable for substantial non-infringing use. The Accused Products have no substantial non-infringing use. Prior to this action, Thales, CalAmp, Xirgo and Laird had knowledge of and intended to cause direct infringement by others and/or Thales, CalAmp, Xirgo and Laird were willfully blind to the existence of the '943 patent and such infringement. For example, as early as December 11, 2015, Thales received a letter from Philips identifying the '943 patent; as early as October 19, 2020, CalAmp received a letter from Philips identifying the '943 patent; as early as October 19, 2020, Xirgo received a letter from Philips identifying the '943 patent; and as early as November 12, 2020, Laird received a letter from Philips identifying the '943 patent.

135. For example, the Accused Products infringe at least independent claims 12 and 15 of the ’943 patent.

136. With respect to claim 12, each Accused Product is a secondary station for use in a radio communication system.

137. Each Accused Product includes a data channel for the transmission of data packets from a primary station to the secondary station and a plurality of control channels for signaling of control information relating to the data packets from the primary station to the secondary station.

138. In each Accused Product, means are provided for determining which of the control channels is allocated to the secondary station, the allocated control channel being changed according to a defined sequence known to both the primary station and the secondary station, and for monitoring the currently allocated control channel to determine information about packet transmissions.

139. In each Accused Product, the defined sequence is configured to reduce probability of an allocation collision to 1/N, where N is a total number of the control channels.

140. With respect to claim 15, each Accused Product is used as a method of operating a radio communication system having a data channel for the transmission of data packets from a primary station to a secondary station and a plurality of control channels for signaling of control information relating to the data packets from the primary station to the secondary station.

141. In the method of each Accused Product, the method includes allocating by the primary station one of the control channels to the secondary station.

142. In the method of each Accused Product, the method includes changing the allocated control channel according to a defined sequence known to both the primary station and the secondary station.

143. In the method of each Accused Product, the method includes monitoring by the secondary station the currently allocated control channel to determine information about packet transmissions.

144. In the method of each Accused Product, the method includes that the defined sequence is configured to reduce probability of an allocation collision to 1/N, where N is a total number of the control channels.

145. The Accused Products practice certain LTE standards, including as set forth in 3GPP TS 36.201, 3GPP TS 36.211, 3GPP TS 36.212, 3GPP TS 36.213, 3GPP TS 36.300, 3GPP TS 36.306, 3GPP TS 36.321, and 3GPP TS 36.331, as described below, including functionality infringing the '943 patent.

146. With respect to claims 12 and 15, the Accused Products are secondary stations for use in a radio communication system (claim 12), and the Accused products perform a method of operating a radio communication system having a data channel for the transmission of data packets from a primary station to a secondary station and a plurality of control channels for signaling of control information relating to the data packets from the primary station to the secondary station (claim 15). Also, for example, the ELS6-US is indicated to be "LTE (FDD) 3GPP Rel.9 Compliant," the PLS62-W is indicated to be "3GPP Rel.9 Compliant," and the ELS31-V is indicated to be "LTE (FDD) 3GPP Rel. 9+." *See* https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/els61-usa (Thales_Cinterion_ELS61_Datasheet.pdf); https://www.thalesgroup.com/en/markets/digital-

identity-and-security/iot/iot-connectivity/products/iot-products/pls62-w (Thales_Cinterion_PLS62_Datasheet.pdf); https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/els31-v (Thales_Cinterion_ELS31_Datasheet.pdf).

147. 3GPP Technical Specification (TS) 36.306 §4.1A also provides:

Table 4.1A-1: Downlink physical layer parameter values set by the field *ue-CategoryDL*

UE DL Category	Maximum number of DL-SCH transport block bits received within a TTI (Note 1)	Maximum number of bits of a DL-SCH transport block received within a TTI	Total number of soft channel bits	Maximum number of supported layers for spatial multiplexing in DL
DL Category M1	1000	1000	25344	1
DL Category 0 (Note 2)	1000	1000	25344	1

See 3GPP TS 36.306 §4.1A; *see also* 3GPP TS 36.300 §4, TS 36.306 §4.1A, and TS 36.201 §4.2.2. 3GPP Technical Specifications are published by 3GPP. *See* www.3GPP.org.

148. The Accused Products include a data channel for the transmission of data packets from a primary station to the secondary station and a plurality of control channels for signaling of control information relating to the data packets from the primary station to the secondary station (claim 12), and the Accused Products perform a method of operating a radio communication system having a data channel for the transmission of data packets from a primary station to a secondary station and a plurality of control channels for signaling of control information relating to the data packets from the primary station to the secondary station (claim 15). For example, 3GPP TS 36.201 § 4.2.2 describes that data information is carried by the physical downlink shared channel: "The physical channels defined in the downlink are … the Physical Downlink Shared Channel (PDSCH)." *See* 3GPP TS 36.201 § 4.2.2. 3GPP TS 36.211 § 6.8.1 describes that control information relating to the PDSCH is carried by a physical downlink control channel (PDCCH): "The physical downlink control channel carries scheduling assignments and other control

information" and "Multiple PDCCHs can be transmitted in a subframe." *See* 3GPP TS 36.211 § 6.8.1. 3GPP TS 36.213 § 9.1.1 provides: "The UE shall monitor a set of PDCCH candidates for control information in every non-DRX subframe, where monitoring implies attempting to decode each of the PDCCHs in the set according to all the monitored DCI formats." *See* 3GPP TS 36.213 § 9.1.1. 3GPP TS 36.212 § 5.3.3 provides "5.3.3 Downlink control information [.] A DCI transports downlink or uplink scheduling information, requests for aperiodic CQI reports, notifications of MCCH change [6] or uplink power control commands for one RNTI. The RNTI is implicitly encoded in the CRC." *See* 3GPP TS 36.212 § 5.3.3. 3GPP TS 36.211 § 6.8.2 provides:

> The block of bits $b^{(i)}(0),\ldots,b^{(i)}(M_{\text{bit}}^{(i)}-1)$ on each of the control channels to be transmitted in a subframe, where $M_{\text{bit}}^{(i)}$ is the number of bits in one subframe to be transmitted on physical downlink control channel number i, shall be multiplexed, resulting in a block of bits $b^{(0)}(0),\ldots,b^{(0)}(M_{\text{bit}}^{(0)}-1),b^{(1)}(0),\ldots,b^{(1)}(M_{\text{bit}}^{(1)}-1),\ldots,b^{(n_{\text{PDCCH}}-1)}(0),\ldots,b^{(n_{\text{PDCCH}}-1)}(M_{\text{bit}}^{(n_{\text{PDCCH}}-1)}-1)$, where n_{PDCCH} is the number of PDCCHs transmitted in the subframe.

See 3GPP TS 36.211 § 6.8.2.

3GPP TS 36.213 § 7.1 provides:

> 7.1 UE procedure for receiving the physical downlink shared channel
>
> A UE shall upon detection of a PDCCH with DCI format 1, 1A, 1B, 1C, 1D, 2, 2A or 2B intended for the UE in a subframe, decode the corresponding PDSCH in the same subframe with the restriction of the number of transport blocks defined in the higher layers.
>
> […]
>
> If a UE is configured by higher layers to decode PDCCH with CRC scrambled by the C-RNTI, the UE shall decode the PDCCH and any corresponding PDSCH according to the respective combinations defined in table 7.1-5. The scrambling initialization of PDSCH corresponding to these PDCCHs is by C-RNTI.
>
> When a UE configured in transmission mode 3, 4 or 8 receives a DCI Format 1A assignment, it shall assume that the PDSCH transmission is associated with transport block 1 and that transport block 2 is disabled.
>
> When a UE is configured in transmission mode 7, scrambling initialization of UE-specific reference signals corresponding to these PDCCHs is by C-RNTI.

The UE does not support transmission mode 8 if extended cyclic prefix is used in the downlink.

Table 7.1-5: PDCCH and PDSCH configured by C-RNTI

Transmission mode	DCI format	Search Space	Transmission scheme of PDSCH corresponding to PDCCH
Mode 1	DCI format 1A	Common and UE specific by C-RNTI	Single-antenna port, port 0 (see subclause 7.1.1)
	DCI format 1	UE specific by C-RNTI	Single-antenna port, port 0 (see subclause 7.1.1)
Mode 2	DCI format 1A	Common and UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
	DCI format 1	UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
Mode 3	DCI format 1A	Common and UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
	DCI format 2A	UE specific by C-RNTI	Large delay CDD (see subclause 7.1.3) or Transmit diversity (see subclause 7.1.2)
Mode 4	DCI format 1A	Common and UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
	DCI format 2	UE specific by C-RNTI	Closed-loop spatial multiplexing (see subclause 7.1.4)or Transmit diversity (see subclause 7.1.2)
Mode 5	DCI format 1A	Common and UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
	DCI format 1D	UE specific by C-RNTI	Multi-user MIMO (see subclause 7.1.5)
Mode 6	DCI format 1A	Common and UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
	DCI format 1B	UE specific by C-RNTI	Closed-loop spatial multiplexing (see subclause 7.1.4) using a single transmission layer
Mode 7	DCI format 1A	Common and UE specific by C-RNTI	If the number of PBCH antenna ports is one, Single-antenna port, port 0 is used (see subclause 7.1.1), otherwise Transmit diversity (see subclause 7.1.2)
	DCI format 1	UE specific by C-RNTI	Single-antenna port; port 5 (see subclause 7.1.1)
Mode 8	DCI format 1A	Common and UE specific by C-RNTI	If the number of PBCH antenna ports is one, Single-antenna port, port 0 is used (see subclause 7.1.1), otherwise Transmit diversity (see subclause 7.1.2)
	DCI format 2B	UE specific by C-RNTI	Dual layer transmission; port 7 and 8 (see subclause 7.1.5A) or single-antenna port; port 7 or 8 (see subclause 7.1.1)

See 3GPP TS 36.213 § 7.1.

3GPP TS 36.213 § 9.1.5 provides:

9.1.5 MPDCCH assignment procedure

A BL/CE UE shall monitor a set of MPDCCH candidates on one or more Narrowbands (described in subclause 6.2.7 of [3]) as configured by higher layer signalling for control information, where monitoring implies attempting to decode each of the MPDCCHs in the set according to all the monitored DCI formats. The Narrowband in a subframe used for MPDCCH monitoring is determined as described in [3].

See 3GPP TS 36.213 § 9.1.5.

3GPP TS 36.211 § 6.8B.1 provides:

6.8B.1 MPDCCH formats

> The MPDCCH formats are defined as in Clause 6.8A.1 with the following exceptions:
>
> - The term EPDCCH is replaced by MPDCCH.

See 3GPP TS 36.211 § 6.8B.1.

> 3GPP TS 36.211 § 6.8A.1 provides:
>
> 6.8A.1 EPDCCH formats
>
> The enhanced physical downlink control channel (EPDCCH) carries scheduling assignments

See 3GPP TS 36.211 § 6.8A.1; *see also* 3GPP TS 36.213 § 9.1.5, 36.211 § 6.8A.1 and 36.211 § 6.8B.1.

149. The Accused Products include means for determining which of the control channels is allocated to the secondary station, the allocated control channel being changed according to a defined sequence known to both the primary station and the secondary station, and for monitoring the currently allocated control channel to determine information about packet transmissions, and the Accused Products also provide that the defined sequence is configured to reduce probability of an allocation collision to 1/N, where N is a total number of the control channels (claim 12), and the Accused Products perform a method of operating a radio communication system that includes allocating by the primary station one of the control channels to the secondary station, perform a method of operating a radio communication system that includes changing the allocated control channel according to a defined sequence known to both the primary station and the secondary station, perform a method of operating a radio communication system that includes monitoring by the secondary station the currently allocated control channel to determine information about packet transmissions, and provide that the defined sequence is configured to reduce probability of an allocation collision to 1/N, where N is a total number of the control channels (claim 15). For example, 3GPP TS 36.213 § 9.1.1 provides: "The UE shall

monitor a set of PDCCH candidates for control information." *See* 3GPP TS 36.213 § 9.1.1. Further, to determine the set of PDCCH candidates to monitor, it is required to determine search space $S_k^{(L)}$ by computing the CCEs as follows in 3GPP TS 36.213 § 9.1.1:

> The set of PDCCH candidates to monitor are defined in terms of search spaces, where a search space $S_k^{(L)}$ at aggregation level $L \in \{1,2,4,8\}$ is defined by a set of PDCCH candidates. The CCEs corresponding to PDCCH candidate *m* of the search space $S_k^{(L)}$ are given by
>
> $$L * \left\{ (Y_k + m) mod \left\lfloor {}^{N_{CCE,k}}/_{L} \right\rfloor \right\} + i$$
>
> where Y_k is defined below, $i = 0, \ldots, L-1$ and $m = 0, \ldots, M^{(L)} - 1$. $M^{(L)}$ is the number of PDCCH candidates to monitor in the given search space.

See 3GPP TS 36.213 § 9.1.1

In order to be received by the UE, the allocated control channel (for a given aggregation level) should be one of the set of candidates monitored by the UE, which is changed (based on the slot number n_s) according to the defined sequence Y_k which, as a function of slot number (for a given aggregation level), are defined as follows in in 3GPP TS 36.213 § 9.1.1:

> For the UE-specific search space $S_k^{(L)}$ at aggregation level *L*, the variable Y_k is defined by
>
> $$Y_k = (A * Y_{k-1}) mod\ D$$
>
> where $Y_{-1} = n_{RNTI} \neq 0$, $A = 39827$, $D = 65537$ and $k = \left\lfloor {}^{n_s}/_{2} \right\rfloor$, n_s is the slot number within a radio frame. The RNTI value used for n_{RNTI} is defined in section 7.1 in downlink and section 8 in uplink.

See 3GPP TS 36.213 § 9.1.1.

Y_k defines a sequence, defined for each UE based on their respective RNTI. 65537 is a (Fermat) prime number and 39827 is a (Gaussian) prime number (for MSE set 0). Thus, the sequence defined by $Y_{0,k}$ is a prime modulus multiplicative linear congruential generator.

(the same applies for other UE specific search spaces p). The same applies for $Y_{1,k}$. In general, the sequence will depend on the value of RNTI, and a particular instance of RNTI is C-RNTI. In typical system operation different UEs will be configured with different values of C-RNTI, leading to all different sequences:

The variable $Y_{p,k}$ is defined by

$$Y_{p,k} = (A_p \cdot Y_{p,k-1}) \bmod D$$

where $Y_{p,-1} = n_{\text{RNTI}} \neq 0$, $A_0 = 39827$, $A_1 = 39829$, $D = 65537$ and $k = \lfloor n_s/2 \rfloor$, n_s is the slot number within a radio frame. The RNTI value used for n_{RNTI} is defined in subclause 7.1 in downlink and subclause 8 in uplink. The DCI formats that the UE shall monitor depend on the configured transmission mode per each serving cell as defined in subclause 7.1.

See 3GPP TS 36.213 § 9.1.4.

3GPP TS 36.213 § 9.1.1 provides: "The UE shall monitor a set of PDCCH candidates for control information in every non-DRX subframe, where monitoring implies attempting to decode each of the PDCCHs in the set according to all the monitored DCI formats." *See* 3GPP TS 36.213 § 9.1.1. 3GPP TS 6.213 § 9.1.1 provides: "The UE shall monitor one common search space at each of the aggregation levels 4 and 8 and one UE-specific search space at each of the aggregation levels 1, 2, 4, 8." *See* 3GPP TS 6.213 § 9.1.1. 3GPP TS 36.213 § 9.1.5 provides: "9.1.5 MPDCCH assignment procedure[.] A BL/CE UE shall monitor a set of MPDCCH candidates …, where monitoring implies attempting to decode each of the MPDCCHs in the set …." *See* 3GPP TS 36.213 § 9.1.5. 3GPP TS 36.213 § 9.1.5 provides:

The BL/CE UE shall monitor one or more of the following search spaces
- a Type0-MPDCCH common search space if configured with CEmodeA,
- a Type1-MPDCCH common search space,
- a Type2-MPDCCH common search space, and
- a MPDCCH UE-specific search space.

See 3GPP TS 36.213 § 9.1.5.

3GPP TS 36.213 § 9.1.5 provides:

> An MPDCCH search space $MS_k^{(L',R)}$ at aggregation level $L' \in \{1, 2, 4, 8, 16, 12, 24\}$ and repetition level $R \in \{1,2,4,8,16,32,64,128,256\}$ is defined by a set of MPDCCH candidates where each candidate is repeated in a set of R consecutive BL/CE downlink subframes starting with subframe k . For an MPDCCH-PRB-set p , the ECCEs corresponding to MPDCCH candidate m of the search space $MS_k^{(L',R)}$ are given by
>
> $$L'\left\{ (Y_{p,k} + \left\lfloor \frac{m \cdot N'_{ECCE,p,k}}{L' \cdot M'^{(L')}_p} \right\rfloor) \bmod \left\lfloor N'_{ECCE,p,k} / L' \right\rfloor \right\} + i$$
>
> where
> $i = 0, \ldots, L'-1$
> $m = 0,1, \ldots M'^{(L')}_p - 1,$
> $M'^{(L')}_p$ is the number of MPDCCH candidates to monitor at aggregation level L' in MPDCCH-PRB-set p in each subframe in the set of R consecutive subframes.

See 3GPP TS 36.213 § 9.1.5.

3GPP TS 36.213 § 9.1.5 provides: "Until BL/CE UE receives higher layer configuration of MPDCCH UE-specific search space, …" *See* 3GPP TS 36.213 § 9.1.5; *see also* 3GPP TS 36.213 § 9.1.5.

Count III
Infringement of U.S. Patent No. 8,199,711

150. Philips repeats and realleges the foregoing paragraphs.

151. The '711 patent is valid and enforceable.

152. Thales, CalAmp, Xirgo and Laird have directly and/or indirectly infringed, either literally and/or under the doctrine of equivalents, one or more claims of the '711 patent, in violation of one or more subsections of 35 U.S.C. § 271 – including at least one or more of subsections § 271(a), (b), (c), (f) and (g) – by making, using, importing, selling, and/or offering to sell products covered by one or more claims of the '711 patent within the United States, and/or by

contributing to or inducing such infringement. The Accused Products include, but are not limited to certain IoT module models, including ELS61-US, PLS62-W, ELS31-V, CL31, ELS31, ELS61, ELS81, EMS31, ENS22, EXS62-W, EXS82-W, mPLAS9, mPLS62, mPLS8, PLAS9, PLPS9, PLS62, PLS8, TX62 and IoT products incorporating the cellular communication modules including Thales' customer CalAmp model HMU-3640LA, Laird model IG60, and Xirgo model XT6372R, and the like.

153. In addition to direct infringement, Thales, CalAmp, Xirgo and Laird have actively induced infringement of the '711 patent, at least by intentionally encouraging the direct infringement of one or more claims of the '711 patent by others. Prior to this action, Thales, CalAmp, Xirgo and Laird had knowledge of and intended to cause direct infringement by others and/or Thales, CalAmp, Xirgo and Laird were willfully blind to the existence of the '711 patent and such infringement. For example, as early as December 11, 2015, Thales received a letter from Philips identifying the '711 patent; as early as October 19, 2020, CalAmp received a letter from Philips identifying the '711 patent; as early as October 19, 2020, Xirgo received a letter from Philips identifying the '711 patent; and as early as November 12, 2020, Laird received a letter from Philips identifying the '711 patent. Thales, CalAmp, Xirgo and Laird provide instructions, user manuals, advertising, and/or marketing materials which facilitate, direct, or encourage such infringing use with knowledge thereof. End users of devices with the Accused Products in them test and/or operate the devices in the United States, thereby also performing the claimed methods and directly infringing claims of the '711 patent.

154. Thales, CalAmp, Xirgo and Laird are also contributory infringers of one or more claims of the '711 patent, at least because they sell, offer to sell, or import into the U.S. a material or apparatus for use in practicing subject matter claimed in the '711 patent, constituting a material

part of the invention, knowing the same to be especially made or especially adapted for use in such infringement, and not a staple article or commodity of commerce suitable for substantial non-infringing use. The Accused Products have no substantial non-infringing use. Prior to this action, Thales, CalAmp, Xirgo and Laird had knowledge of and intended to cause direct infringement by others and/or Thales, CalAmp, Xirgo and Laird were willfully blind to the existence of the '711 patent and such infringement. For example, as early as December 11, 2015, Thales received a letter from Philips identifying the '711 patent; as early as October 19, 2020, CalAmp received a letter from Philips identifying the '711 patent; as early as October 19, 2020, Xirgo received a letter from Philips identifying the '711 patent; and as early as November 12, 2020, Laird received a letter from Philips identifying the '711 patent.

155. For example, the Accused Products infringe at least independent claims 9 and 12 of the '711 patent.

156. With respect to claim 9, each Accused Product is a secondary station for use in a radio communication system.

157. Each Accused Product includes a data channel for the transmission of data packets from a primary station to the secondary station.

158. Each Accused Product includes a plurality of control channels for signaling of control information relating to the data packets from the primary station to the secondary station.

159. In each Accused Product, means are provided for determining which of the control channels is allocated to the secondary station wherein the control channels are allocated for a plurality of secondary stations according to a plurality of respective defined sequences, all of which are different, the allocated control channel being changed according to a respective defined

sequence, and for monitoring the currently allocated control channel to determine information about packet transmissions.

160. With respect to claim 12, each Accused Product is used as a method of operating a radio communication system having a data channel for the transmission of data packets from a primary station to a secondary station and a plurality of control channels for signaling of control information relating to the data packets from the primary station to the secondary station.

161. In the method of each Accused Product, the method includes the primary station allocating one of the control channels to the secondary station and changing the allocated control channel according to a defined sequence.

162. In the method of each Accused Product, the method includes the secondary station monitoring the currently allocated control channel to determine information about packet transmissions.

163. In the method of each Accused Product, the method includes that the primary station allocates control channels for a plurality of secondary stations according to a plurality of respective defined sequences, all of which are different.

164. The Accused Products practice certain LTE standards, including as set forth in 3GPP TS 36.306, 3GPP TS 36.201, 3GPP TS 36.211, 3GPP TS 36.212, and 3GPP TS 36.213, as described below, including functionality infringing the ’711 patent.

165. With respect to claims 9 and 12, the Accused Devices are secondary stations for use in a radio communication system (claim 9), and the Accused Products perform a method of operating a radio communication system having a data channel for the transmission of data packets from a primary station to a secondary station and a plurality of control channels for signaling of control information relating to the data packets from the primary station to the secondary station

(claim 12). Also, for example, the ELS6-US is indicated to be "LTE (FDD) 3GPP Rel.9 Compliant," the PLS62-W is indicated to be "3GPP Rel.9 Compliant," and the ELS31-V is indicated to be "LTE (FDD) 3GPP Rel. 9+." *See* https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/els61-usa (Thales_Cinterion_ELS61_Datasheet.pdf); https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/pls62-w (Thales_Cinterion_PLS62_Datasheet.pdf); https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/els31-v (Thales_Cinterion_ELS31_Datasheet.pdf). Also, 3GPP Technical Specification (TS) 36.306 §4.1A provides:

Table 4.1A-1: Downlink physical layer parameter values set by the field *ue-CategoryDL*

UE DL Category	Maximum number of DL-SCH transport block bits received within a TTI (Note 1)	Maximum number of bits of a DL-SCH transport block received within a TTI	Total number of soft channel bits	Maximum number of supported layers for spatial multiplexing in DL
DL Category M1	1000	1000	25344	1
DL Category 0 (Note 2)	1000	1000	25344	1

See 36.306 §4.1A; *see also*, 3GPP TS 36.300 § 4, TS 36.306 §4.1A, and TS 36.201 § 4.2.2. 3GPP Technical Specifications are published by 3GPP, see www.3GPP.org.

166. The Accused Products include a data channel for the transmission of data packets from a primary station to the secondary station (claim 9), and the Accused Products perform a method of operating a radio communication system that includes the primary station allocating one of the control channels to the secondary station and changing the allocated control channel according to a defined sequence (claim 12). 3GPP TS 36.201 § 4.2.2 discloses that data information is carried by the physical downlink shared channel: "The physical channels defined in

the downlink are … the Physical Downlink Shared Channel (PDSCH)." *See* 3GPP TS 36.201 § 4.2.2.

167. The Accused Products include a plurality of control channels for signaling of control information relating to the data packets from the primary station to the secondary station (claim 9), and the Accuse Products perform a method of operating a radio communication system that includes the primary station allocating one of the control channels to the secondary station and changing the allocated control channel according to a defined sequence (claim 12). 3GPP TS 36.211 § 6.8.1 discloses that control information relating to the PDSCH is carried by a physical downlink control channel (PDCCH): "The physical downlink control channel carries scheduling assignments and other control information" and "Multiple PDCCHs can be transmitted in a subframe." *See* 3GPP TS 36.211 § 6.8.1. Furthermore, 3GPP TS 36.213 § 9.1.1. provides: "The UE shall monitor a set of PDCCH candidates for control information in every non-DRX subframe, where monitoring implies attempting to decode each of the PDCCHs in the set according to all the monitored DCI formats." 3GPP TS 36.213 § 9.1.1. Also, 3GPP TS 36.212 § 5.3.3 provides "5.3.3 Downlink control information [.] A DCI transports downlink or uplink scheduling information, requests for aperiodic CQI reports, notifications of MCCH change [6] or uplink power control commands for one RNTI. The RNTI is implicitly encoded in the CRC." *See* 3GPP TS 36.212 § 5.3.3. Also, 3GPP TS 36.211 § 6.8.2 provides:

> The block of bits $b^{(i)}(0),\ldots,b^{(i)}(M_{\text{bit}}^{(i)}-1)$ on each of the control channels to be transmitted in a subframe, where $M_{\text{bit}}^{(i)}$ is the number of bits in one subframe to be transmitted on physical downlink control channel number i, shall be multiplexed, resulting in a block of bits $b^{(0)}(0),\ldots,b^{(0)}(M_{\text{bit}}^{(0)}-1),b^{(1)}(0),\ldots,b^{(1)}(M_{\text{bit}}^{(1)}-1),\ldots,b^{(n_{\text{PDCCH}}-1)}(0),\ldots,b^{(n_{\text{PDCCH}}-1)}(M_{\text{bit}}^{(n_{\text{PDCCH}}-1)}-1)$, where n_{PDCCH} is the number of PDCCHs transmitted in the subframe.

See 3GPP TS 36.211 § 6.8.2.

Also, 3GPP TS 36.213 § 7.1 provides:

7.1 UE procedure for receiving the physical downlink shared channel

A UE shall upon detection of a PDCCH with DCI format 1, 1A, 1B, 1C, 1D, 2, 2A or 2B intended for the UE in a subframe, decode the corresponding PDSCH in the same subframe with the restriction of the number of transport blocks defined in the higher layers.

[…]

If a UE is configured by higher layers to decode PDCCH with CRC scrambled by the C-RNTI, the UE shall decode the PDCCH and any corresponding PDSCH according to the respective combinations defined in table 7.1-5. The scrambling initialization of PDSCH corresponding to these PDCCHs is by C-RNTI.

When a UE configured in transmission mode 3, 4 or 8 receives a DCI Format 1A assignment, it shall assume that the PDSCH transmission is associated with transport block 1 and that transport block 2 is disabled.

When a UE is configured in transmission mode 7, scrambling initialization of UE-specific reference signals corresponding to these PDCCHs is by C-RNTI.

The UE does not support transmission mode 8 if extended cyclic prefix is used in the downlink.

Table 7.1-5: PDCCH and PDSCH configured by C-RNTI

Transmission mode	DCI format	Search Space	Transmission scheme of PDSCH corresponding to PDCCH
Mode 1	DCI format 1A	Common and UE specific by C-RNTI	Single-antenna port, port 0 (see subclause 7.1.1)
	DCI format 1	UE specific by C-RNTI	Single-antenna port, port 0 (see subclause 7.1.1)
Mode 2	DCI format 1A	Common and UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
	DCI format 1	UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
Mode 3	DCI format 1A	Common and UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
	DCI format 2A	UE specific by C-RNTI	Large delay CDD (see subclause 7.1.3) or Transmit diversity (see subclause 7.1.2)
Mode 4	DCI format 1A	Common and UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
	DCI format 2	UE specific by C-RNTI	Closed-loop spatial multiplexing (see subclause 7.1.4)or Transmit diversity (see subclause 7.1.2)
Mode 5	DCI format 1A	Common and UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
	DCI format 1D	UE specific by C-RNTI	Multi-user MIMO (see subclause 7.1.5)
Mode 6	DCI format 1A	Common and UE specific by C-RNTI	Transmit diversity (see subclause 7.1.2)
	DCI format 1B	UE specific by C-RNTI	Closed-loop spatial multiplexing (see subclause 7.1.4) using a single transmission layer
Mode 7	DCI format 1A	Common and UE specific by C-RNTI	If the number of PBCH antenna ports is one, Single-antenna port, port 0 is used (see subclause 7.1.1), otherwise Transmit diversity (see subclause 7.1.2)
	DCI format 1	UE specific by C-RNTI	Single-antenna port; port 5 (see subclause 7.1.1)
Mode 8	DCI format 1A	Common and UE specific by C-RNTI	If the number of PBCH antenna ports is one, Single-antenna port, port 0 is used (see subclause 7.1.1), otherwise Transmit diversity (see subclause 7.1.2)
	DCI format 2B	UE specific by C-RNTI	Dual layer transmission; port 7 and 8 (see subclause 7.1.5A) or single-antenna port; port 7 or 8 (see subclause 7.1.1)

See 3GPP TS 36.213 § 7.1.

Also, 3GPP TS 36.213 § 9.1.5 provides:

9.1.5 MPDCCH assignment procedure

A BL/CE UE shall monitor a set of MPDCCH candidates on one or more Narrowbands (described in subclause 6.2.7 of [3]) as configured by higher layer signalling for control information, where monitoring implies attempting to decode each of the MPDCCHs in the set according to all the monitored DCI formats. The Narrowband in a subframe used for MPDCCH monitoring is determined as described in [3].

See 3GPP TS 36.213 § 9.1.5.

Also, 3GPP TS 36.211 § 6.8B.1 provides:

6.8B.1 MPDCCH formats

The MPDCCH formats are defined as in Clause 6.8A.1 with the following exceptions:

- The term EPDCCH is replaced by MPDCCH.

See 3GPP TS 36.211 § 6.8B.1.

Also, 3GPP TS 36.211 § 6.8A.1 provides:

6.8A.1 EPDCCH formats

The enhanced physical downlink control channel (EPDCCH) carries scheduling assignments

See 3GPP TS 36.211 § 6.8A.1; *see also* 3GPP TS 36.213 § 9.1.5, TS 36.211 § 6.8A.1 and TS 36.211 § 6.8B.1.

168. The Accused Products include means for determining which of the control channels is allocated to the secondary station wherein the control channels are allocated for a plurality of secondary stations according to a plurality of respective defined sequences, all of which are different, the allocated control channel being changed according to a respective defined sequence, and for monitoring the currently allocated control channel to determine information about packet transmissions (claim 9); and the Accused Products perform a method of operating a radio communication system that includes the secondary station monitoring the currently allocated control channel to determine information about packet transmissions, and the Accused Products provides that the primary station allocates control channels for a plurality of secondary stations according to a plurality of respective defined sequences, all of which are different (claim 12). For example, 3GPP TS 36.213 § 9.1.1 provides: "The UE shall monitor a set of PDCCH candidates for control information." *See* 3GPP TS 36.213 § 9.1.1. Further, to determine the set of PDCCH candidates to monitor, it is required to determine search space $S_k^{(L)}$ by computing the CCEs as follows:

> The set of PDCCH candidates to monitor are defined in terms of search spaces, where a search space $S_k^{(L)}$ at aggregation level $L \in \{1,2,4,8\}$ is defined by a set of PDCCH candidates. The CCEs corresponding to PDCCH candidate *m* of the

search space $S_k^{(L)}$ are given by

$$L * \{(Y_k + m) mod \lfloor N_{CCE,k}/L \rfloor\} + i$$

where Y_k is defined below, $i = 0, \ldots, L-1$ and $m = 0, \ldots, M^{(L)} - 1$. $M^{(L)}$ is the number of PDCCH candidates to monitor in the given search space.

See 3GPP TS 36.213 § 9.1.1.

In order to be received by the UE, the allocated control channel (for a given aggregation level) should be one of the set of candidates monitored by the UE, which is changed (based on the slot number n_s) according to the defined sequence Y_k which, as a function of slot number (for a given aggregation level), are defined as follows:

For the UE-specific search space $S_k^{(L)}$ at aggregation level L, the variable Y_k is defined by

$$Y_k = (A * Y_{k-1}) mod D$$

where $Y_{-1} = n_{RNTI} \neq 0$, $A = 39827$, $D = 65537$ and $k = \lfloor n_s/2 \rfloor$, n_s is the slot number within a radio frame. The RNTI value used for n_{RNTI} is defined in section 7.1 in downlink and section 8 in uplink.

See 3GPP TS 36.213 § 9.1.1.

Y_k defines a sequence, defined for each UE based on their respective RNTI. 65537 is a (Fermat) prime number and 39827 is a (Gaussian) prime number (for MSE set 0). Thus, the sequence defined by $Y_{0,k}$ is a prime modulus multiplicative linear congruential generator. (the same applies for other UE specific search spaces p). The same applies for $Y_{1,k}$. In general, the sequence will depend on the value of RNTI, and a particular instance of RNTI is C-RNTI. In typical system operation different UEs will be configured with different values of C-RNTI, leading to all different sequences:

The variable $Y_{p,k}$ is defined by

$$Y_{p,k} = (A_p \cdot Y_{p,k-1}) \bmod D$$

where $Y_{p,-1} = n_{\text{RNTI}} \neq 0$, $A_0 = 39827$, $A_1 = 39829$, $D = 65537$ and $k = \lfloor n_s/2 \rfloor$, n_s is the slot number within a radio frame. The RNTI value used for n_{RNTI} is defined in subclause 7.1 in downlink and subclause 8 in uplink. The DCI formats that the UE shall monitor depend on the configured transmission mode per each serving cell as defined in subclause 7.1.

See 3GPP TS 36.213 § 9.1.4.

3GPP TS 36.213 § 9.1.1 also provides: "The UE shall monitor a set of PDCCH candidates for control information in every non-DRX subframe, where monitoring implies attempting to decode each of the PDCCHs in the set according to all the monitored DCI formats." *See* 3GPP TS 36.213 § 9.1.1. 3GPP TS 6.213 § 9.1.1 also provides: "The UE shall monitor one common search space at each of the aggregation levels 4 and 8 and one UE-specific search space at each of the aggregation levels 1, 2, 4, 8." 3GPP TS 6.213 § 9.1.1. 3GPP TS 36.213 § 9.1.5 also provides: "9.1.5 MPDCCH assignment procedure [.] A BL/CE UE shall monitor a set of MPDCCH candidates …, where monitoring implies attempting to decode each of the MPDCCHs in the set …." *See* 3GPP TS 36.213 § 9.1.5. 3GPP TS 36.213 § 9.1.5 provides:

> The BL/CE UE shall monitor one or more of the following search spaces
> - a Type0-MPDCCH common search space if configured with CEmodeA,
> - a Type1-MPDCCH common search space,
> - a Type2-MPDCCH common search space, and
> - a MPDCCH UE-specific search space.

See 3GPP TS 36.213 § 9.1.5.

3GPP TS 36.213 § 9.1.5 provides:

> An MPDCCH search space $MS_k^{(L',R)}$ at aggregation level $L' \in \{1, 2, 4, 8, 16, 12, 24\}$ and repetition level $R \in \{1,2,4,8,16,32,64,128,256\}$ is defined by a set of MPDCCH candidates where each candidate is repeated in a set of R consecutive BL/CE downlink subframes starting with subframe k. For an MPDCCH-PRB-set p, the ECCEs corresponding to MPDCCH candidate m of the search space

$MS_k^{(L',R)}$ are given by

$$L'\left\{ (Y_{p,k} + \left\lfloor \frac{m \cdot N'_{ECCE,p,k}}{L' \cdot M'^{(L')}_p} \right\rfloor) \bmod \left\lfloor N'_{ECCE,p,k} / L' \right\rfloor \right\} + i$$

where
$i = 0, \ldots, L'-1$
$m = 0,1, \ldots M'^{(L')}_p - 1,$
$M'^{(L')}_p$ is the number of MPDCCH candidates to monitor at aggregation level L' in MPDCCH-PRB-set p in each subframe in the set of R consecutive subframes.

See 3GPP TS 36.213 § 9.1.5.

3GPP TS 36.213 § 9.1.5 also provides: "Until BL/CE UE receives higher layer configuration of MPDCCH UE-specific search space, …" 3GPP TS 36.213 § 9.1.5.; *see also* 3GPP TS 36.213 § 9.1.5.

Count IV
Infringement of U.S. Patent No. 7,831,271

169. Philips repeats and realleges the foregoing paragraphs.

170. The '271 patent is valid and enforceable.

171. Thales, CalAmp, Xirgo and Laird have directly and/or indirectly infringed, either literally and/or under the doctrine of equivalents, one or more claims of the '271 patent, in violation of one or more subsections of 35 U.S.C. § 271 – including at least one or more of subsections § 271(a), (b), (c), (f) and (g) – by making, using, importing, selling, and/or offering to sell products covered by one or more claims of the '271 patent within the United States, and/or by contributing to or inducing such infringement. The Accused Products include, but are not limited to certain IoT module models, including ELS61-US, PLS62-W, ELS31-V, CL31, ELS31, ELS61, ELS81, EMS31, ENS22, EXS62-W, EXS82-W, mPLAS9, mPLS62, mPLS8, PLAS9, PLPS9,

PLS62, PLS8, TX62 and IoT products incorporating the cellular communication modules including Thales' customer CalAmp model HMU-3640LA, Laird model IG60, and Xirgo model XT6372R, and the like.

172. In addition to direct infringement, Thales, CalAmp, Xirgo and Laird have actively induced infringement of the '271 patent, at least by intentionally encouraging the direct infringement of one or more claims of the '271 patent by others. Prior to this action, Thales, CalAmp, Xirgo and Laird had knowledge of and intended to cause direct infringement by others and/or Thales, CalAmp, Xirgo and Laird were willfully blind to the existence of the '271 patent and such infringement. For example, as early as December 11, 2015, Thales received a letter from Philips identifying the '271 patent; as early as October 19, 2020, CalAmp received a letter from Philips identifying the '271 patent; as early as October 19, 2020, Xirgo received a letter from Philips identifying the '271 patent; and as early as November 12, 2020, Laird received a letter from Philips identifying the '271 patent. Thales, CalAmp, Xirgo and Laird provide instructions, user manuals, advertising, and/or marketing materials which facilitate, direct, or encourage such infringing use with knowledge thereof. End users of devices with the Accused Products in them test and/or operate the devices in the United States, thereby also performing the claimed methods and directly infringing claims of the '271 patent.

173. Thales, CalAmp, Xirgo and Laird are also contributory infringers of one or more claims of the '271 patent, at least because they sell, offer to sell, or import into the U.S. a material or apparatus for use in practicing subject matter claimed in the '271 patent, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in such infringement, and not a staple article or commodity of commerce suitable for substantial non-infringing use. The Accused Products have no substantial non-infringing use. Prior to this action,

Thales, CalAmp, Xirgo and Laird had knowledge of and intended to cause direct infringement by others and/or Thales, CalAmp, Xirgo and Laird were willfully blind to the existence of the '271 patent and such infringement. For example, as early as December 11, 2015, Thales received a letter from Philips identifying the '271 patent; as early as October 19, 2020, CalAmp received a letter from Philips identifying the '271 patent; as early as October 19, 2020, Xirgo received a letter from Philips identifying the '271 patent; and as early as November 12, 2020, Laird received a letter from Philips identifying the '271 patent.

174. For example, the Accused Products infringe at least claims 1-4 and 5-8 of the '271 patent.

175. With respect to independent claim 1, each Accused Product is used as a method of operating a communication station (MS) adapted to transmit a plurality of signals simultaneously at respective power levels.

176. In the method of each Accused Product, the method includes transmitting one or more first signals (DPCCH, DPDCH) simultaneously at a specified maximum combined transmit power level (P max).

177. In the method of each Accused Product, the method includes that in response to a received signal, reducing the transmit power of the one or more first signals (DPCCH, DPDCH) and transmitting simultaneously with the one or more first signals (DPCCH, DPDCH) an additional one of a second signal (ACK or NACK) at a respective second specified power level (PA or PN) and a third signal (NACK or ACK) at a respective third specified power level (PN or PA).

178. In the method of each Accused Product, the method includes that the second specified power level (PA or PN) exceeds the third specified power level (PN or PA); wherein the

reduction in transmit power of the one or more first signals (DPCCH, DPDCH) corresponds to the second specified power level (PA or PN) irrespective of whether the additional signal is the second signal (ACK or NACK) or the third signal (NACK or ACK), such that when the additional signal is the third signal (NACK or ACK) the combined transmit power level is less than the specified maximum combined transmit power level (P max).

179. With respect to independent claim 5, each Accused Product is a communication station (MS) adapted to transmit a plurality of signals simultaneously at respective power levels.

180. Each Accused Product includes a transceiver means (38) for transmitting one or more first signals (DPCCH, DPDCH) simultaneously at a specified maximum combined transmit power level (P max), for receiving signals, and for, in response to a received signal, transmitting simultaneously with the one or more first signals (DPCCH, DPDCH) an additional one of a second signal (ACK or NACK) and a third signal (NACK or ACK).

181. Each Accused Product includes a control means (30) for controlling the transmitted power level of the one or more first signals (DPCCH, DPDCH) and the additional signal (ACK, NACK).

182. In each Accused Product, the control means (34) is adapted to, in response to the received signal, reduce the transmit power of the one or more first signals (DPCCH, DPDCH) and to set the transmit power of the additional signal, if the additional signal is the second signal (ACK or NACK), to a respective second specified power level (PA or PN) and, if the additional signal is the third signal (NACK or ACK), to a respective third specified power level (PN or PA), wherein the second specified power level (PA or PN) exceeds the third specified power level (PN or PA).

183. In each Accused Product, the reduction in transmit power of the one or more first signals (DPCCH, DPDCH) corresponds to the second specified power level (PA or PA)

irrespective of whether the additional signal is the second signal (ACK or NACK) or the third signal (NACK or ACK), such that when the additional signal is the third signal (NACK or ACK) the combined transmit power level is less than the specified maximum combined transmit power (Pmax).

184. With respect to dependent claim 6, in each Accused Product, the control means (34) is adapted to transmit the one or more first signals (DPCCH, DPDCH) in first frames or time slots and to transmit the additional signals in second frames or time slots.

185. In each Accused Product, the boundaries between the first frames or time slots are not coincident with the boundaries between the second frames or time slots.

186. In each Accused Product, the reduction in transmit power of the one or more first signals (DPCCH, DPDCH) commences at the first frame or time slot boundary immediately preceding the transmission of the additional signal.

187. With respect to dependent claim 7, in each Accused Product, the second signal (ACK or NACK) is a positive acknowledgement and the third signal (NACK or ACK) is a negative acknowledgement.

188. With respect to dependent claim 8, in each Accused Product, the signals are spread spectrum signals.

189. The Accused Products practice certain 3G UMTS standards, including as set forth in 3GPP TS 25.101, 3GPP TS 25.211, 3GPP TS 25.212, 3GPP TS 25.213, and 3GPP TS 25.214, as described below, including functionality infringing the ’271 patent.

190. With respect to claim 1, the Accused Devices perform a method of operating a communication station (MS) adapted to transmit a plurality of signals simultaneously at respective power levels. Also, for example, the ELS6-US is indicated to be “LTE (FDD) 3GPP Rel.9

Compliant," the PLS62-W is indicated to be "3GPP Rel.9 Compliant," and the ELS31-V is indicated to be "LTE (FDD) 3GPP Rel. 9+." *See* https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/els61-usa (Thales_Cinterion_ELS61_Datasheet.pdf); https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/pls62-w (Thales_Cinterion_PLS62_Datasheet.pdf); https://www.thalesgroup.com/en/markets/digital-identity-and-security/iot/iot-connectivity/products/iot-products/els31-v (Thales_Cinterion_ELS31_Datasheet.pdf).

191. Also, the MS includes a transceiver which is able to transmit and receive data on various channels. The transmit power of the Dedicated Physical Control Channel (DPCCH) is set by higher layers, and the power of Dedicated Physical Data Channel (DPDCH) and High Speed Dedicated Physical Control Channel (HS-DPCCH) is set relative to the DPCCH using gain factors. The power of the DPCCH (first signal) is controlled by the uplink transmit power control procedure, and the power level of other signals is set relative to this power by gain factors. *See* 3GPP TS 25.214 § 5.1.2.1, 3GPP TS 25.214 § 5.1.2.5, 3GPP TS 25.214 § 5.1.2.5A. Also, 3GPP TS 25.214 § 5.1.2.1 provides: "The initial uplink DPCCH transmit power is set by higher layers. Subsequently the uplink transmit power control procedure simultaneously and independently controls the power of a DPCCH on each activated uplink frequency and its corresponding DPDCHs (if present). The relative transmit power offset between DPCCH and DPDCHs is determined by the network and is computed according to subclause 5.1.2.5 using the gain factors signalled to the UE using higher layer signalling." *See* 3GPP TS 25.214 § 5.1.2.1. Also, 3GPP TS 25.214 § 5.1.2.5 provides "5.1.2.5 Setting of the uplink DPCCH/DPDCH relative powers […] The uplink DPCCH and DPDCH(s) are transmitted on different codes as defined in subclause 4.2.1 of

[3]. In the case that at least one DPDCH is configured, the gain factors βc and βd may vary for each TFC. There are two ways of controlling the gain factors of the DPCCH code and the DPDCH codes for different TFCs in normal (non-compressed) frames." *See* 3GPP TS 25.214 § 5.1.2.5. Also, 3GPP TS 25.214 § 5.1.2.5A provides: "5.1.2.5A Setting of the uplink HS-DPCCH power relative to DPCCH power […] When an HS-DPCCH is active, the values for ΔACK, ΔNACK and ΔCQI set by higher layers are translated to the quantized amplitude ratios A_{hs} as specified in [3] subclause 4.2.1.2, and shall be set for each HS-DPCCH slot." *See* 3GPP TS 25.214 § 5.1.2.5A. Also, 3GPP TS 25.214 § 5.1.2.5A provides: "A_{hs} equals the quantized amplitude ratio translated from the signalled value ΔACK if the corresponding HARQACK message is ACK; A_{hs} equals the quantized amplitude ratio translated from the signalled value ΔNACK if the corresponding HARQACK message is NACK." *See* 3GPP TS 25.214 § 5.1.2.5A. Also, 3GPP TS 25.211 § 5.2.1 provides: "There are five types of uplink dedicated physical channels, the uplink Dedicated Physical Data Channel (uplink DPDCH), the uplink Dedicated Physical Control Channel (uplink DPCCH), the uplink E-DCH Dedicated Physical Data Channel (uplink E-DPDCH), the uplink E-DCH Dedicated Physical Control Channel (uplink E-DPCCH) and the uplink Dedicated Control Channel associated with HS-DSCH transmission (uplink HS-DPCCH)." *See* 3GPP TS 25.211 § 5.2.1. Also, 3GPP TS 25.211 § 5.2.1.1 provides: "The transport-format combination indicator informs the receiver about the instantaneous transport format combination of the transport channels mapped to the simultaneously transmitted uplink DPDCH radio frame." *See* 3GPP TS 25.211 § 5.2.1.1.

192. The Accused Products perform a method transmitting one or more first signals (DPCCH, DPDCH) simultaneously at a specified maximum combined transmit power level (P max). See quotations and descriptions, as above, concerning the "method of operating a

communication station adapted to transmit a plurality of signals simultaneously at respective power levels" ("'271 limitation [1a]"). Additionally, the transceiver can receive data packets transmitted on a High Speed Downlink Shared Channel (HS-DSCH), and transmit positive and negative acknowledgements (ACK/NACK) to indicate whether a packet was received correctly. *See* 3GPP TS 25.211 § 5.3.3.13, 3GPP TS 25.211 § 4.1.2.7, 3GPP TS 25.214 § 6A.1.1. Also, 3GPP TS 25.211 § 5.3.3.13 provides: "The High Speed Physical Downlink Shared Channel (HS-PDSCH) is used to carry the High Speed Downlink Shared Channel (HS-DSCH)." *See* 3GPP TS 25.211 § 5.3.3.13. Also, 3GPP TS 25.211 § 4.1.2.7 provides: "The High Speed Downlink Shared Channel is a downlink transport channel shared by several UEs. The HS-DSCH can be associated with one downlink DPCH or F-DPCH, and one or several Shared Control Channels (HS-SCCH). The HSDSCH is transmitted over the entire cell or over only part of the cell using e.g. beam-forming antennas." *See* 3GPP TS 25.211 § 4.1.2.7. Also, 3GPP TS 25.214 § 6A.1.1 provides: "The UE shall transmit the ACK/NACK information received from MAC-hs or MAC-ehs in the slot allocated to the HARQ-ACK in the corresponding HS-DPCCH sub-frame." *See* 3GPP TS 25.214 § 6A.1.1. Also, 3GPP TS 25.214 § 5.1.2.6 provides:

> When E-DCH is not configured, in the case that the total UE transmit power (after applying DPCCH power adjustments and gain factors) would exceed the maximum allowed value, the UE shall apply additional scaling to the total transmit power so that it is equal to the maximum allowed power. This additional scaling shall be such that the power ratio between DPCCH and DPDCH and also DPCCH and HS-DPCCH remains as required by sub-clause 5.1.2.5 and 5.1.2.5A.
>
> […]
>
> In order that the total UE transmit power does not exceed the maximum allowed value the scaling or E-DPDCH gain factor reduction shall be computed using the maximum HS-DPCCH power transmitted in the next DPCCH slot. In the case that either an ACK or a NACK transmission will start during the next DPCCH slot, the maximum HS-DPCCH power shall be computed using one of the following:
> (a) whichever of ΔACK and ΔNACK will be used according to whether the

> transmission will be ACK or NACK, or
> (b) whichever of ΔACK and ΔNACK is the largest.

See 3GPP TS 25.214 § 5.1.2.6; 3GPP TS 25.101 § 6.2.1.

193. The Accused Products perform a method, wherein, in response to a received signal, reducing the transmit power of the one or more first signals (DPCCH, DPDCH) and transmitting simultaneously with the one or more first signals (DPCCH, DPDCH) an additional one of a second signal (ACK or NACK) at a respective second specified power level (PA or PN) and a third signal (NACK or ACK) at a respective third specified power level (PN or PA). See quotations and descriptions, as above, concerning '271 limitation [1a] and the "transmitting one or more first signals (DPCCH, DPDCH) simultaneously at a specified maximum combined transmit power level (P max)" limitation ("'271 limitation [1b]"). Additionally, 3GPP TS 25.214 § 5.1.2.6 provides:

> When E-DCH is not configured, in the case that the total UE transmit power (after applying DPCCH power adjustments and gain factors) would exceed the maximum allowed value, the UE shall apply additional scaling to the total transmit power so that it is equal to the maximum allowed power. This additional scaling shall be such that the power ratio between DPCCH and DPDCH and also DPCCH and HS-DPCCH remains as required by sub-clause 5.1.2.5 and 5.1.2.5A.
>
> […]
>
> In order that the total UE transmit power does not exceed the maximum allowed value the scaling or E-DPDCH gain factor reduction shall be computed using the maximum HS-DPCCH power transmitted in the next DPCCH slot. In the case that either an ACK or a NACK transmission will start during the next DPCCH slot, the maximum HS-DPCCH power shall be computed using one of the following:
> (a) whichever of ΔACK and ΔNACK will be used according to whether the transmission will be ACK or NACK, or
> (b) whichever of ΔACK and ΔNACK is the largest.

See 3GPP TS 25.214 § 5.1.2.6.

194. The Accused Products perform a method, wherein the second specified power level (PA or PN) exceeds the third specified power level (P Nor PA); wherein the reduction in

transmit power of the one or more first signals (DPCCH, DPDCH) corresponds to the second specified power level (PA or PN) irrespective of whether the additional signal is the second signal (ACK or NACK) or the third signal (NACK or ACK), such that when the additional signal is the third signal (NACK or ACK) the combined transmit power level is less than the specified maximum combined transmit power level (P max). See quotations and descriptions, as above, concerning '271 limitation [1a]. Additionally, after receipt of a data packet on the HS-DSCH, the MS transmits a Hybrid-ARQ Acknowledgement (HARQ-ACK) on a High Speed Dedicated Physical Control Channel (HS-DPCCH). Possible signal types include ACK and NACK. The power offset is ΔACK for a positive acknowledgement and ΔNACK for a negative acknowledgement. *See* 3GPP TS 25.211 § 5.2.1, 3GPP TS 25.212 § 4.7.1.1, 3GPP TS 25.214 § 5.1.2.5A, 3GPP TS 25.214 § 6A.1.1. Also, 3GPP TS 25.212 § 4.7.1.1 provides: "Data arrives to the coding unit in form of indicators for measurement indication and HARQ acknowledgement." *See* 3GPP TS 25.212 § 4.7.1.1. Also, 3GPP TS 25.214 § 5.1.2.5A provides: "5.1.2.5A Setting of the uplink HS-DPCCH power relative to DPCCH power […] When an HS-DPCCH is active, the values for ΔACK, ΔNACK and ΔCQI set by higher layers are translated to the quantized amplitude ratios A_{hs} as specified in [3] subclause 4.2.1.2, and shall be set for each HS-DPCCH slot." *See* 3GPP TS 25.214 § 5.1.2.5A. Also, 3GPP TS 25.214 § 5.1.2.5A provides: "A_{hs} equals the quantized amplitude ratio translated from the signalled value ΔACK if the corresponding HARQ-ACK message is ACK; A_{hs} equals the quantized amplitude ratio translated from the signalled value ΔNACK if the corresponding HARQ-ACK message is NACK." *See* 3GPP TS 25.214 § 5.1.2.5A. Also, 3GPP TS 25.214 § 6A.1.1 provides: "The UE shall transmit the ACK/NACK information received from MAC-hs or MAC-ehs in the slot allocated to the HARQ-ACK in the corresponding HS-DPCCH sub-frame." *See* 3GPP TS 25.214 § 6A.1.1. If the total MS

transmit power would exceed the maximum allowed value, the MS scales the total transmit power to make it equal to the maximum allowed power. If it is not known whether ACK or NACK will be transmitted, this scaling is computed using the larger of ΔACK and ΔNACK. *See* 3GPP TS 25.214 § 5.1.2.6. Also, 3GPP TS 25.214 § 5.1.2.6 provides: "When E-DCH is not configured, in the case that the total UE transmit power (after applying DPCCH power adjustments and gain factors) would exceed the maximum allowed value, the UE shall apply additional scaling to the total transmit power so that it is equal to the maximum allowed power." *See* 3GPP TS 25.214 § 5.1.2.6. 3GPP TS 25.214 § 5.1.2.6 provides:

> Any scaling, and any reduction in the E-DPDCH gain factor as described above, shall only be applied or changed at a DPCCH slot boundary. In order that the total UE transmit power does not exceed the maximum allowed value the scaling or E-DPDCH gain factor reduction shall be computed using the maximum HS-DPCCH power transmitted in the next DPCCH slot. In the case that either an ACK or a NACK transmission will start during the next DPCCH slot, the maximum HS-DPCCH power shall be computed using one of the following:
>
> (a) whichever of ΔACK and ΔNACK will be used according to whether the transmission will be ACK or NACK, or
>
> (b) whichever of ΔACK and ΔNACK is the largest.

See 3GPP TS 25.214 § 5.1.2.6.

195. With respect to claims 2 and 6, the Accused Products perform a method of operating a communication station (MS) wherein the one or more first signals (DPCCH, DPDCH) are transmitted in first frames or time slots and the additional signals are transmitted in second frames or time slots (claim 2), and provide that the control means (34) is adapted to transmit the one or more first signals (DPCCH, DPDCH) in first frames or time slots and to transmit the additional signals in second frames or time slots (claim 6). See quotations and descriptions, as above, concerning the "wherein the second specified power level (PA or PN) exceeds the third

specified power level (P Nor PA) …" limitations ("'271 limitation [1d]"). Also, 3GPP TS 25.211 § 7.7 provides:

> 7.7 Uplink DPCCH/HS-DPCCH/HS-PDSCH timing at the UE
>
> Figure 34 shows the timing offset between the uplink DPCH, the HS-PDSCH and the HS-DPCCH at the UE. An HSDPCCH sub-frame starts *m* x 256 chips after the start of an uplink DPCH frame that corresponds to the DL DPCH or F-DPCH frame from the HS-DSCH serving cell containing the beginning of the related HS-PDSCH subframe with *m* calculated as
>
> $m = (T_{TX\_diff} /256) + 101$
>
> where T_{TX_diff} is the difference in chips (T_{TX_diff} =0, 256, ..., 38144), between
>
> - the transmit timing of the start of the related HS-PDSCH subframe (see sub-clauses 7.8 and 7.1)
>
> and
>
> - the transmit timing of the start of the downlink DPCH or F-DPCH frame from the HS-DSCH serving cell that contains the beginning of the HS-PDSCH subframe (see sub-clause 7.1).
>
> At any one time, *m* therefore takes one of a set of five possible values according to the transmission timing of HSDSCH sub-frame timings relative to the DPCH or F-DPCH frame boundary. The UE and Node B shall only update the set of values of *m* in connection to UTRAN reconfiguration of downlink timing.
>
> More information about uplink timing adjustments can be found in [5].

See 3GPP TS 25.211 § 7.7.

Also, 3GPP TS 25.211 § 7.7 provides:

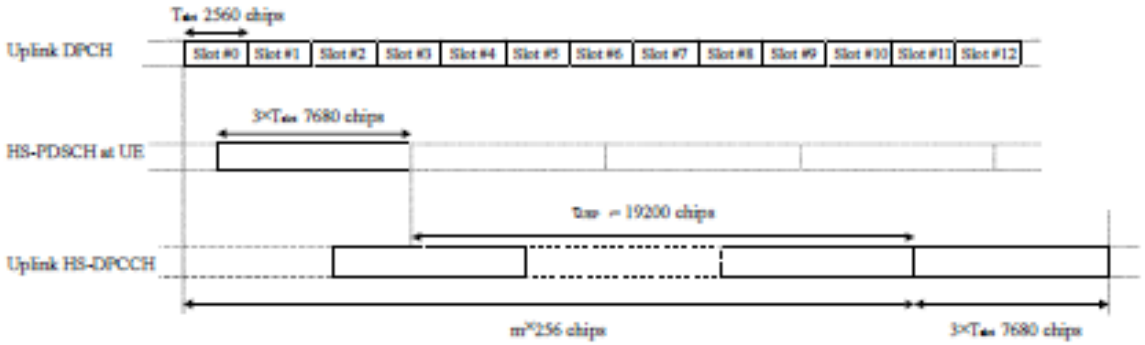


Figure 34: Timing structure at the UE for HS-DPCCH control signalling

See 3GPP TS 25.211 § 7.7.

196. The Accused Products provide that the boundaries between the first frames or time slots are not coincident with the boundaries between the second frames or time slots (claims 2 and 6). See quotations and descriptions, as above, concerning the "wherein the second specified power level (PA or PN) exceeds the third specified power level (PN or PA) …" limitation ("'271 limitation [1d]") from claim 1 and the "a method of operating a communication station (MS) wherein the one or more first signals (DPCCH, DPDCH) are transmitted in first frames or time slots and the additional signals are transmitted in second frames or time slots" limitation from claim 2 ("'271 limitation [2a]").

197. The Accused Products provide that the reduction in transmit power of the one or more first signals (D PCCH, D PDCH) commences at the first frame or time slot boundary immediately preceding the transmission of the additional signal (claims 2 and 6). See quotations and descriptions, as above, concerning '271 limitation [1d]. Also, 3GPP TS 25.214 § 5.1.2.6 provides: "Any scaling, and any reduction in the E-DPDCH gain factor as described above, shall only be applied or changed at a DPCCH slot boundary. In order that the total UE transmit power does not exceed the maximum allowed value the scaling or E-DPDCH gain factor reduction shall

be computed using the maximum HS-DPCCH power transmitted in the next DPCCH slot." *See* 3GPP TS 25.214 § 5.1.2.6.

198. With respect to claims 3 and 7, the Accused Products perform a method of operating a communication station (MS) wherein the second signal (ACK or NACK) is a positive acknowledgement and the third signal (NACK or ACK) is a negative acknowledgement (claim 3), and provide that the second signal (ACK or NACK) is a positive acknowledgement and the third signal (NACK or ACK) is a negative acknowledgement (claim 7). 3GPP TS 25.214 § 3.2 describes that ACK is defined as an "Acknowledgement" and NACK is defined as "NACK Negative Acknowledgement". *See* 3GPP TS 25.214 § 3.2.

199. With respect to claims 4 and 8, the Accused Products perform a method of operating a communication station (MS) wherein the signals are spread spectrum signals (claim 4), and provide that the signals are spread spectrum signals (claim 8). 3GPP TS 25.213 § 4.1 provides:

> Spreading is applied to the physical channels. It consists of two operations. The first is the channelisation operation, which transforms every data symbol into a number of chips, thus increasing the bandwidth of the signal. The number of chips per data symbol is called the Spreading Factor (SF). The second operation is the scrambling operation, where a scrambling code is applied to the spread signal.
>
> With the channelisation, data symbols on so-called I- and Q-branches are independently multiplied with an OVSF code. With the scrambling operation, the resultant signals on the I- and Q-branches are further multiplied by complex-valued scrambling code, where I and Q denote real and imaginary parts, respectively."

See 3GPP TS 25.213 § 4.1.

200. With respect to claim 5, the Accused Products are communication stations (MS) adapted to transmit a plurality of signals simultaneously at respective power levels. See quotations and descriptions, as above, concerning '271 limitation [1a].

201. The Accused Products also include transceiver means for transmitting one or more first signals (DPCCH, DPDCH) simultaneously at a specified maximum combined transmit power level (P max), for receiving signals, and for, in response to a received signal, transmitting simultaneously with the one or more first signals (DPCCH, DPDCH) an additional one of a second signal (ACK or NACK) and a third signal (NACK or ACK). See quotations and descriptions, as above, concerning '271 limitation [1b] and the "wherein, in response to a received signal, reducing the transmit power of the one or more first signals (DPCCH, DPDCH) and transmitting simultaneously with the one or more first signals (DPCCH, DPDCH) an additional one of a second signal (ACK or NACK) at a respective second specified power level (PA or PN) and a third signal (NACK or ACK) at a respective third specified power level (PN or PA)" limitation ("'271 limitation [1c]").

202. The Accused Products also include control means for controlling the transmitted power level of the one or more first signals (DPCCH, DPDCH) and the additional signal (ACK, NACK). See quotations and descriptions, as above, concerning '271 limitations [1b] and [1c].

203. The Accused Products also provide that the control means is adapted to, in response to the received signal, reduce the transmit power of the one or more first signals (DPCCH, DPDCH) and to set the transmit power of the additional signal, if the additional signal is the second signal (ACK or NACK), to a respective second specified power level (PA or PN) and, if the additional signal is the third signal (NACK or ACK), to a respective third specified power level (PN or PA), wherein the second specified power level (PA or PN) exceeds the third specified power level (PN or PA). See quotations and descriptions, as above, concerning '271 limitations [1b] and [1c].

204. The Accused Products also provide that the reduction in transmit power of the one or more first signals (DPCCH, DPDCH) corresponds to the second specified power level (PA or PA) irrespective of whether the additional signal is the second signal (ACK or NACK) or the third signal (NACK or ACK), such that when the additional signal is the third signal (NACK or ACK) the combined transmit power level is less than the specified maximum combined transmit power (Pmax). See quotations and descriptions, as above, concerning '271 limitation [1d].

Count V
Declaratory Judgment Related to FRAND and ETSI Matters

205. Philips repeats and realleges the foregoing paragraphs.

206. As discussed above, Philips has repeatedly offered to license rights to its world-wide portfolio including the Asserted Patents (and others) to Thales and the other defendants, but Thales and the other defendants have not accepted Philips' offers to license the world-wide portfolio. Philips' offers to license the patents have been on fair, reasonable and non-discriminatory ("FRAND") terms, pursuant to ETSI policy.

207. Despite notice in 2015 of the Asserted Patents and others in Philips' world-wide portfolio, followed by years of additional communications between the parties in which Philips offered and demonstrated its willingness to provide a world-wide license in those patents to Thales, Thales has steadfastly refused to accept Philips' FRAND licensing offers and acted as a "hold out" while infringing Philips' patents in a manner consistent with an "efficient infringement" tactical approach.

208. Similarly, despite notice in 2020 of the Asserted Patents and others in Philips' world-wide portfolio, followed by additional communications between the parties in which Philips offered and demonstrated its willingness to provide a world-wide license in those patents to

CalAmp, Xirgo and Laird, CalAmp, Xirgo and Laird have not accepted Philips' FRAND licensing offers.

209. Thales and the other defendants have thus not committed to accept Philips' FRAND offers and license Philips' world-wide patents under such FRAND terms, even if determined by this Court. Thales, CalAmp, Xirgo and Laird should therefore not be permitted to ask this Court, or any other court worldwide, to determine a FRAND or ETSI terms or raise any other FRAND or ETSI defenses. This Court has dismissed counts seeking FRAND determinations observing that "there has been no sworn affidavit by either company that they would sign a license." *InterDigital Communs., Inc. v. ZTE Corp.*, C.A. No. 13-00009-RGA, 2014 WL 2206218, *3 (D. Del. May 28, 2014). In particular, Thales, CalAmp, Xirgo and Laird should not be permitted to circumvent this Court's jurisdiction by asking a foreign court or another United States court to address FRAND or ETSI matters. Absent a sworn affidavit by Thales, CalAmp, Xirgo and Laird stating that they would sign a license to Philips' world-wide cellular communications patents under FRAND and ETSI rates and terms determined by this Court, Philips requests that the Court enter judgment that Thales, CalAmp, Xirgo and Laird may not raise any claim seeking a determination of the FRAND rates and terms or raise any other FRAND claims in this or any other court world-wide, especially including seeking an anti-suit injunction against these proceedings or instituting any other form of collateral attack to this Court's proper jurisdiction and judgment.

210. An actual controversy has arisen and now exists between Philips and Thales, CalAmp, Xirgo and Laird, which have adverse legal interests, regarding whether Thales, CalAmp, Xirgo and Laird may raise such FRAND and ETSI-related claims, having refused and continuing to refuse Philips' FRAND license offers or a FRAND license determination of this Court. There is

a case or controversy of sufficient immediacy, reality and ripeness to warrant the issuance of declaratory judgment.

211. To the extent Thales, CalAmp, Xirgo and Laird do provide sworn affidavits stating that they would sign a license to Philips' world-wide cellular communications patents at the FRAND rates and terms consistent with ETSI policies as determined by this Court, regardless of any findings on infringement and validity of the Asserted Patents, then an actual controversy will have arisen and exist between Philips and Thales, CalAmp, Xirgo and Laird, with Philips having adverse legal interests to Thales, CalAmp, Xirgo and Laird, regarding FRAND and ETSI terms for Philips' patents. Philips is entitled to a declaratory judgment determining the appropriate world-wide FRAND licensing terms for Philips' world-wide portfolio of patents under ETSI policies.

212. In addition, with respect to Counts I-IV, Thales's, CalAmp's, Xirgo's and Laird's prior and ongoing infringement of all the Asserted Patents is willful and deliberate, as Thales, CalAmp, Xirgo and Laird became aware of the Asserted Patents, as detailed above, and have continued to infringe.

213. In addition, with respect to Counts I-IV, Thales's, CalAmp's, Xirgo's and Laird's infringement of the Asserted Patents are exceptional and entitles Philips to an award of attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

PRAYER FOR RELIEF

WHEREFORE, Philips requests that this Court enter judgment as follows ordering that:

(a) Thales, CalAmp, Xirgo and Laird infringe the Asserted Patents by making, using, offering for sale, selling and/or offering to sell products covered by the Asserted Patents claims within the United States, and/or by contributing to or inducing such infringement;

(b) Thales's, CalAmp's, Xirgo's and Laird's infringement of the Asserted Patents is willful;

(c) Thales, CalAmp, Xirgo and Laird and their affiliates, subsidiaries, officers, directors, employees, agents, representatives, licensees, successors, assigns, and all those acting for any of them or on their behalf, or acting in concert with them, be preliminarily and permanently enjoined from further infringement of Plaintiff's patent rights;

(d) Plaintiff be awarded compensatory damages and costs, with prejudgment interest;

(e) Plaintiff be awarded treble damages for the willful patent infringement;

(f) This case be declared to be exceptional in favor of Plaintiff under 35 U.S.C. § 285, and that Plaintiff be awarded its costs, attorneys' fees, and other expenses incurred in connection with this action;

(g) A declaration that Thales, CalAmp, Xirgo and Laird, having not committed to accepting ETSI FRAND licenses as determined by this Court for licenses under Philips' world-wide portfolio, are either: (a) not entitled to raise any claim seeking a determination of the ETSI FRAND rates and terms or raise any other ETSI FRAND claims or raise any other FRAND claims in this or any other court world-wide, including seeking an anti-suit injunction against these proceedings or instituting any other form of collateral attack to this Court's proper jurisdiction and judgment; or (b) if Thales, CalAmp, Xirgo and Laird do commit to accepting

ETSI FRAND licenses as determined by this Court, then such licenses should be determined by this Court and no other foreign court for a license under Philips' world-wide portfolio of standard essential patents, and

(h) Plaintiff will be awarded such other relief as the Court deems just and proper.

JURY DEMAND

Philips demands a trial by jury on all issues so triable.

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